

Railway Age

Vol. 83

July 16, 1927

No. 3



A Train Load of Case Threshing Machines on the C. & N. W. Near Racine, Wis.

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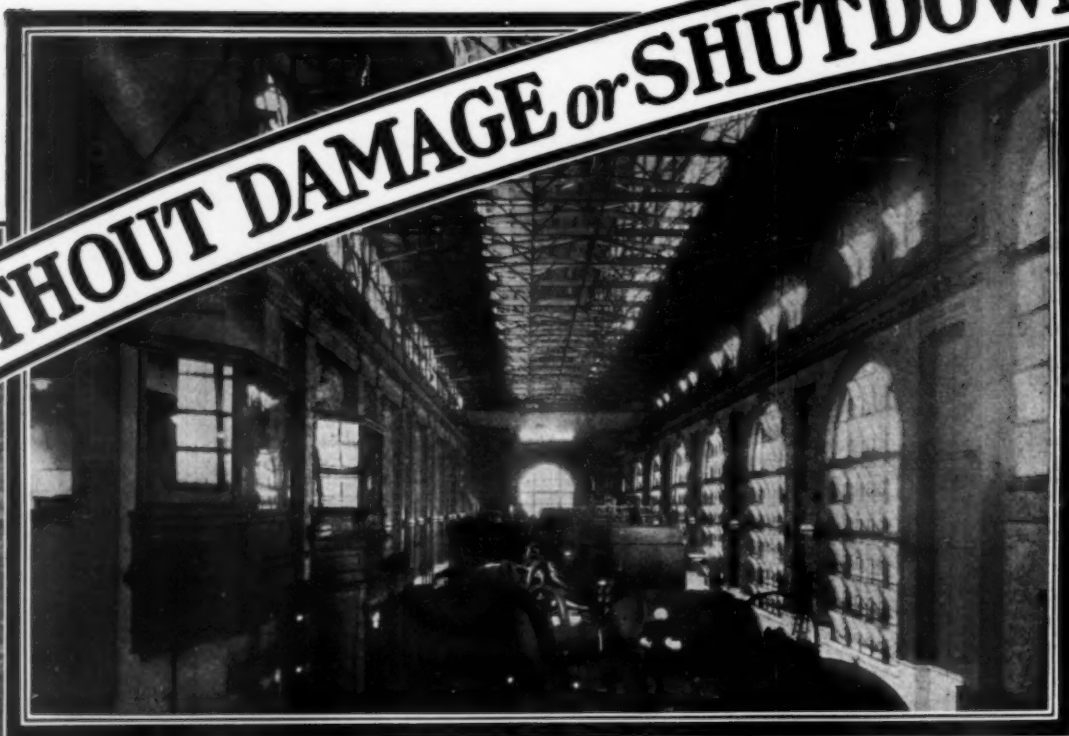
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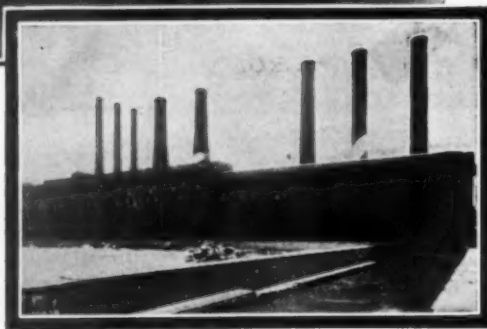
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Railway Age

Vol. 83, No. 3

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Per Diem Dollars

THERE is one pertinent factor that should be considered in all campaigns to reduce per diem costs and that is that money paid out or collected as per diem is actual cash. Transportation officers and employees have nothing to do with paying or collecting per diem charges. That is to them merely one of the mysterious things they do in the accounting department. Usually, if they have any idea on the subject at all, it is the erroneous one that per diem is a sort of a reciprocal arrangement that comes out all right in the end. During per diem campaigns, efforts should be made to impress upon the men the fact that per diem dollars received are cash dollars, which will buy locomotives and cars and pay their wages. Conversely, they should be taught that per diem dollars paid out are also real money and represent a definite and frequently unnecessary expenditure.

Freight and Passenger Car Orders

TWICE before, in its issues of June 4, 1927, and April 9, 1927, the *Railway Age* has had occasion to comment on the fact that passenger car orders were running ahead of those placed in 1926. They continue to do so with the total for the first six months of 1927 of 1,100 as compared to 860 in the same period a year ago. This is one indication that 1927 promises to be a good equipment year. Another is that the number of orders placed for freight cars for domestic use, as reported in the *Railway Age*, were higher in the first six months than in the same period of 1926. The orders reported in the *Railway Age* show that the freight car orders in the first 28 weeks of 1927 amounted to 43,418 against 41,394 for the same period of 1926. Moreover, the month of June was next to the highest month, with 7,566 orders placed, January being the highest with 17,196.

Railroads Study Air Transport

WILLIAM P. MacCRACKEN, JR., assistant secretary of Commerce for Aviation, according to press reports, made the definite statement before the annual meeting of the Ohio Bar Association at Cedar Point, Ohio, on July 7, that five large railroad companies had been in conference with him for some time considering supplementing their rail service with air service. This information of Mr. MacCracken's is not entirely new. It has been rumored for some time that certain railroads had given some consideration to this matter. This, however, is the first definite and official announcement in confirmation of these reports. Persons who are interested in railroad progress and development must find satisfaction in this statement, since it indicates that the railroads are awake to the potentialities of air transport and are

acquiring a knowledge of its possibilities while it is yet in its infancy. Whether the railroads ever themselves are to operate important air transport lines is not the immediate question. Certainly, however, air transport, like motor transport, to be fully effective should be co-ordinated with rail transportation. The interest of railroad men in this subject at the present time indicates the likelihood of progress toward this end as air transport grows in effectiveness.

"Avoid Traffic Jams— Take a Train"

ONLY one instance of a railway using the argument that troublesome traffic congestion of the highways can be avoided by a vacationist leaving his car at home and taking a train has been noted by a constant reader of middle western railway advertising this summer; yet this seems to be the strongest selling-point for their resort service that the railways have. Thousands of Chicagoans drive in their own cars distances of 500 miles or more every summer to reach their favorite vacation spots. The same is true of people in other localities. All know from experience that, entirely aside from the hazards of accidents and breakdowns, they must face the certainty of nerve-wracking traffic jams in getting into and out of large cities. Frequently, however, this knowledge is merely subconscious until the trip is under way and the tie-ups themselves are actually encountered. By reminding vacation motorists in their advertisements of the troubles that lie ahead of them, the railways should be able to convert many a road weary family into train riders again.

Merchandising Passenger Transportation

THE new station which the Reading plans to build on North Broad street, Philadelphia, will, while fulfilling other needs, be designed particularly to cater to the automobilist. A considerable area of land has been acquired adjacent to the new structure where intending passengers will be permitted to park their cars in the care of station attendants. The idea of presenting a sales appeal of this kind to the passenger is not entirely new, since there is at least one other road, and there may be still others, which has made a direct bid for passenger traffic on a basis of ample station parking space. The idea, however, of acquiring additional land with such a purpose in view, emphatically draws attention to railroad alertness in the field of passenger traffic merchandising. Other instances which give similar testimony are constantly occurring. Passenger business is not as good as it was several years ago, due largely to automobile competition. However, the railroads are extending the situations

where by improving their service the incentive for the prospective passenger to travel all the way in his own automobile is lessened. An equilibrium will be reached eventually, if indeed it is not already here. And railroad effort in improving service will assure the placing of this equilibrium at a higher level of service to the patron—and of business to the railroad—than could otherwise be the case.

Definite Data on Economic Benefits of Signals

BECAUSE the 254-mile installation of automatic block signals completed by the Seaboard Air Line in January, 1926, represents the first extensive use made of automatic signals on that road the management deemed it advisable to obtain some definite data on the economies to be derived therefrom. Steps were taken to preserve records of train operation, pay rolls, tonnage, etc., for periods prior and subsequent to the date the signals were completed with the idea that a report could be compiled to determine the actual cash value of the benefits to train operation. No pains were spared in the investigation of all details to insure that the actual money values of each item would be ascertained. The result is perhaps the most definite and comprehensive report ever published on the benefits of automatic signals for train operation. As explained in the article elsewhere in this issue, a saving of 24.5 per cent was made on the investment for signals on one 95-mile engine district, and the time of revenue freight trains northbound, in the direction of the preponderance of traffic, was reduced 1 hr. 26 min., which permitted an advance in the time of deliveries of perishables. Based on the demonstrated benefits of this first signal installation the Seaboard has since installed signals on 155 miles of line and has contracted for signals on 92 more miles to be completed by January 1, 1928. The results of automatic signals are, therefore, highly satisfactory to the management, and this report, based on so thorough an investigation, will be of benefit to many other roads.

Should Railroads Advertise Automatic Train Control?

A RECENT newspaper advertisement extolling the increased safety of train operation attending installation of automatic train control on the Chicago & North Western between Clinton, Ohio, and Omaha, Neb., and soon to be completed eastward between Clinton and Chicago, suggests the possibility of "selling the public" on the superior safety of travel by rail as compared with that on the public highways. A similar effort to acquaint the traveling public with the greater protection afforded to passengers by virtue of the automatic train control equipment is noticed in a descriptive bulletin which was distributed to the public in connection with the several exhibitions of the Milwaukee's newly equipped Pioneer Limited. In the description of the locomotive there appeared the following reference to the train control equipment: "One of the most interesting features is the automatic train stop, which device protects the passenger against accidents due to broken rails or failure of enginemen to observe signals. The system automatically controls the pneumatic brake devices."

There are comparatively few places where a man is less likely to meet with an accident than in a passenger coach of a steam railroad and when the further safeguard provided by the "invisible engineman" of automatic control is given proper publicity in passenger traffic advertising, the public reaction cannot help but be most beneficial to the railroads, because there is something about automatic train control which fires the imagination and is conducive to that feeling of complete security which every railway passenger will appreciate, particularly when the train on which he is riding is safeguarded with the most modern safety appliances. The present popular interest in automatic train control should, if possible, be capitalized through proper publicity.

General Decline in Passenger Business

WHILE railway freight business has been larger thus far this year than last, passenger business, which increased in the early months of 1926, has renewed its decline, and has been less even than in 1925. The most marked decline has occurred in the southern region. In that territory travel by rail, owing to the Florida boom and other causes, actually increased in 1925 and in the early part of 1926, but in the first four months of the present year it declined almost 15 per cent. In the entire country railway passenger earnings declined in these months from \$329,290,000 to \$314,888,000. Most of the loss was in day coach business and no doubt was due to motor competition, but for the first time in some years there was also a loss of sleeping and parlor car business. Day coach business declined from about \$185,400,000 to about \$173,000,000, or approximately \$12,400,000, while sleeping and parlor car business declined from about \$144,300,000 to about \$141,100,000, or approximately \$3,200,000, a total loss in passenger earnings of about \$15,600,000. At this rate passenger earnings for the year would show a decline of about \$50,000,000. This would make them less than in any year since 1917 and the traffic from which they were derived less than in any year since 1912. Railway passenger business reached its peak in 1920. The decline in it since then, calculated on the basis of the present average rate per mile, is causing a loss in annual earnings of about \$366,000,000, which, if the railways are to earn the so-called "fair return" must be made up from freight earnings.

Long Engine Runs on Southern Pacific

ONE of the strong papers presented at the International Railway Fuel Convention at Chicago in May was that by T. H. Williams, assistant general manager of the Southern Pacific, who outlined the economies effected by long engine runs between Los Angeles, Cal., and El Paso, Texas, a distance of 815 miles, or 888 miles in the case of trains routed via the recently acquired El Paso & Southwestern and the new section of main line in Arizona. The Southern Pacific, which was a pioneer in developing long engine runs and has been following this practice since January, 1924, is now running five passenger trains daily each way between Los

Angeles and El Paso, covering and fully protecting this service with 25 booster-equipped Mountain type locomotives of 67,760 total tractive effort, whereas 50 locomotives would be required under former methods. Fuel oil is taken at four points enroute, and tenders with a water capacity of 12,000 gal., and more recently 16,000 gal., facilitate long runs between stops for water, the longest being 160 miles between Aqua, Ariz., and Picacho. The substantial savings effected by the Southern Pacific through this extension of locomotive runs include, as pointed out in Mr. Williams' paper, a reduced capital investment in this one pool of engines of \$571,045, a saving in enginehouse expenses of \$8,000 per month, a reduction in enginehouse fuel of \$2,692 per month, and a 16 per cent decrease in cost of classified repairs per locomotive mile.

Rule G

ALTHOUGH violations of Rule G (relative to the use of intoxicating liquors) by train service employees were formerly the cause of much concern among operating officers and were a common topic of discussion in these columns in past years, they are seldom considered worthy of such attention today. The fact that this subject was brought before the recent convention of the Superintendents' association and discussed actively is therefore of special interest. The discussion was precipitated by the statement of a speaker from another branch of railway service to the effect that violations of Rule G were more numerous now than formerly and were also more difficult to detect. This statement was challenged promptly by a considerable number of men from widely separated parts of the United States and Canada who testified to the practically complete elimination of the use of liquor as a factor in train accidents. Regardless of the accuracy of the speaker's statement, he made a further comment in elaboration of his original statement which is worthy of consideration. This referred to the difficulty of detecting such violations as occur today when such liquor as is consumed is used within private homes as contrasted with the open bar of pre-war days. Because of this fact, operating officers cannot afford to relax their vigilance, for while they may be entirely warranted in their belief that their men are not using liquor today, it is also possible that more is being used than they realize. In other words, the subject still requires attention.

Cost of Living Index Affected by Changing Fashions

THE U. S. Bureau of Labor Statistics has issued a statement intimating that it may soon discontinue its publication of cost of living index figures because it hesitates longer to rely on the family budget figures which it gathered in 1918 for the purpose of weighting its price statistics. The budget survey was originally made for the Shipping Board as a basis for fixing its rates of wages and the cost of living index has figured largely in railway and other wage adjustment proceedings. The statement says that because of the well-known changes in the standard of living since 1918 the proportions of the family income expended for different items entering into the budget have changed,

although it is impossible to say how far the figures purporting to show the effect of changed prices on the actual cost of living are "off" or in what direction they are "off." The bureau seems to be more than half right, for once, at least. Of what importance in a cost of living index to-day is the price of cotton stockings, or even of some other items of cotton or wool which, although more in evidence now than when they were "unmentionable" are certainly less weighty, statistically and otherwise? In 1918 silk shirts were supposed to have been something of an item in a shipworker's budget, although perhaps those who wore them were not the ones who kept budgets, whereas the price of silk stockings would now be more important. In 1918 the price of Fords was a vital factor, but now it is understood that of Chevrolets is more significant and possibly there is some difference in the proportion of original cost to upkeep. The cost of the new radio may have been offset to some extent by the reduced cost of running the car but an increased consumption of rubber (tires or soles) may be offset against the reduced use of leather, both per capita and per shoe. It is said that the greatly increased use of the closed car has caused an enormous shrinkage in the sales of overcoats, while the electricity bill has gone up as the ice bill has come down. The bureau recommends a new family budget survey, with the geographical limits selected along broader lines, saying that the over-balancing effect of the 18 shipbuilding centers on which its survey was originally based was never entirely overcome. It also points out that its budget figures cover at best but 12,098 families. To-day there would be less railway employees as well as shipworkers in any group of 12,000 than in 1918. All of which simply goes to prove that it is far easier to show that statistics are wrong than it is to get them right.

Another Angle of the Hot Box Problem

THE proper handling of the modern high-grade steels which are being used to an increasing extent in locomotive and car construction presents a problem of concern not only to the shop man but to mechanical and operating officers as well. The heating of parts of locomotive driving rods, for example, either by applied heat for straightening work, or as a result of welding, sets up local stresses that would result in failure if it were not for the fact that subsequent heat treatment restores the physical structure of the metal so as to remove the danger of failure. The study that has recently been directed toward this phase of locomotive repair work has resulted in some shops being provided with adequate heat treating equipment and properly trained men to handle it. For those who have not recognized the seriousness of this problem there lurks the ever present danger of expensive equipment failures.

Hot boxes have been a sufficiently important factor in train operation that the attention of both operating and mechanical men has at times been largely directed toward the elimination of costly delays resulting from them. There is a phase of the hot box problem, however, that may not have been given the recognition which it deserves. A hot box on a locomotive truck axle or a car axle may develop a temperature high enough to seriously affect the physical structure of the metal at

the journal bearing. That portion of an axle between the wheel fit and the bearing is its most vulnerable point at which a fracture is most likely to occur. Heat generated as the result of a hot box raises the temperature of the metal in the axle at the bearing to a point considerably above that of the adjoining metal. This heat is dissipated somewhat by the greater volume of cooler metal in the wheel hub and axle fit but in the process stresses are set up in the axle at the point of greatest stress. If all axles, and particularly locomotive truck axles, that have been subjected to the detrimental effects of hot boxes were immediately removed from service and annealed many axle failures might be averted. Some roads have even considered this condition serious enough to warrant the scrapping of axles that have been overheated as a result of hot boxes. A hot box is serious in itself but a derailment due to a broken axle constitutes an operating hazard that should be eliminated by a searching investigation of every contributing cause.

New England Roads More Prosperous

THE changes that have taken place in the railroad world since the railroads began again to be prosperous have on some occasions been almost kaleidoscopic. There are any number of examples. A notable one is the increase in the price of railway stocks. Certainly only people gifted with the most remarkable sort of foresight could have thought back in July, 1923, for example, when the *Railway Age* average of 20 representative railroad stocks was about 60, that only four years would have to elapse before this same average would reach 114 or nearly double. This evidence of change is nowhere more striking than has been the case of the New England roads. The decision of the Interstate Commerce Commission refusing further increased divisions for the New England roads, while it no doubt will probably not please these roads particularly, will serve to draw attention to how marked the improvement in their fortunes has been. In 1923 the situation in the New England region was such that the region reported net operating income equivalent to but 2.32 per cent of the property investment. This was the lowest rate of return reported by any region. Even the Northwestern region, which was next lowest, reported 3.45 per cent and the railroads as a whole reported 4.48 per cent.

The New England situation was felt to be about hopeless. Later there was improvement. In 1925 the New England roads reported a rate of return of 4.82 per cent as compared with the country's 4.85 per cent; in 1926 the New England region rate of return was 5.06 as compared with the country's 5.13 per cent. The report of revenues and expenses for the first five months of 1927 in last week's *Railway Age* shows the New England region with a rate of return of 5.48 per cent as compared with the rate of return for all Class I railroads of 4.64 per cent. But, what is more, the New England region—once in the slough of despond—now ranks second. It is exceeded only by the Pocahontas region which at present is doing a rushing business in non-union coal and is reporting 8.68 per cent. The Northwestern region is now the low region with its five-months' rate of return of but 2.18 per cent on its property investment. Will a wand some day be waved over it in the guise of rate relief or revived agricultural prosperity which will permit that region to evidence similar remarkable improvement?

The Adversities of Prosperity

THE recommendation of an examiner that the Interstate Commerce Commission decline to permit the Lackawanna to turn over to its stockholders, through the new Lackawanna Securities Company, \$10,000,000 Morris & Essex 5 per cent bonds and \$13,635,000 New York, Lackawanna & Western bonds, is about in keeping with several of the recent negative decisions of the commission. The case comes before the commission because when the bonds were issued by the two leased subsidiary lines, in payment for advances, the commission laid down a proviso that they should not be disposed of by the parent company except upon further order of the commission. The latter's approval is not required for the turning over to the securities company of the \$58,500,000 Glen Alden bonds or the \$9,871,000 Morris & Essex 3½ per cent bonds, so the Lackawanna Securities plan can still be carried out although having smaller assets than the \$92,000,000 which was originally intended.

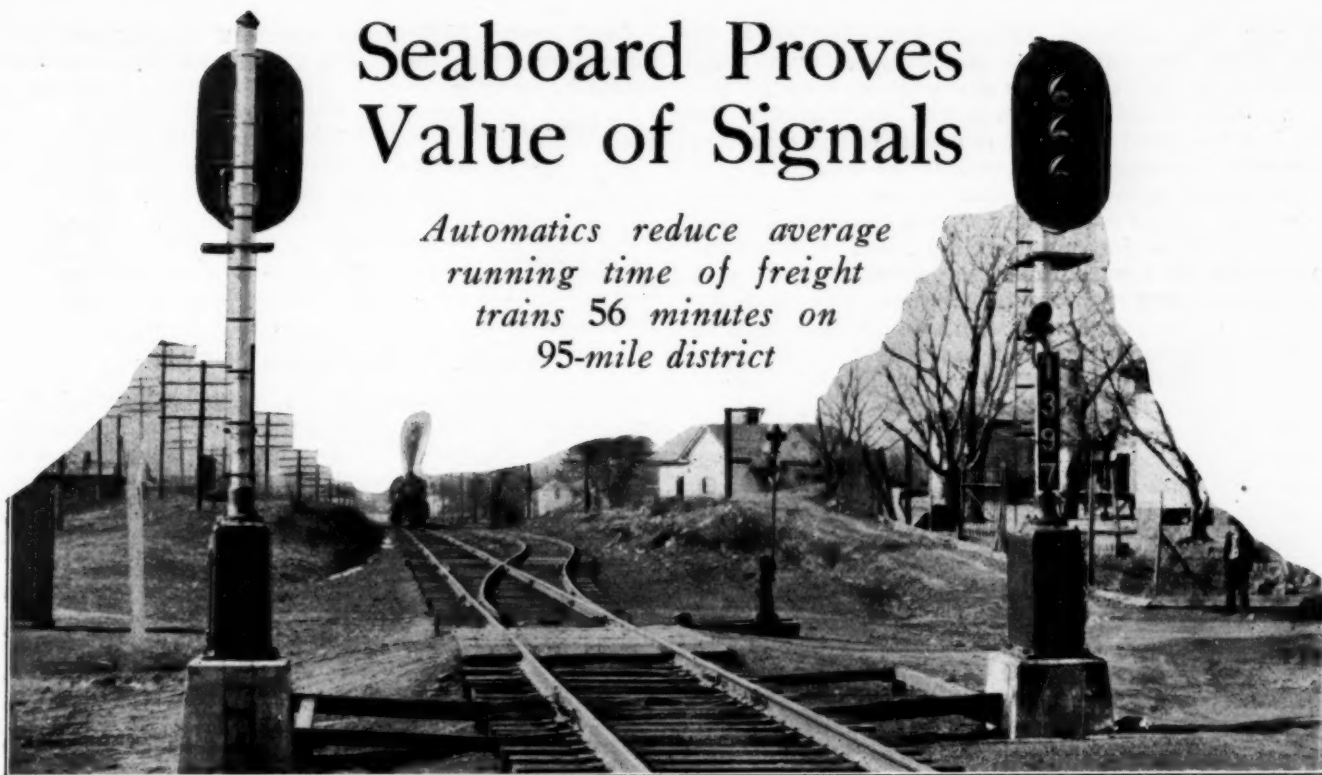
The examiner's recommendations are in some respects ironic. It happens, for instance, that some years ago the Lackawanna issued a 100 per cent stock dividend. In approving that issue, with reservations, of course, the commission said "Several items of the remaining \$88,255,788 of the surplus do not fall within that class of assets which we deem it proper to permit the applicant to capitalize. . . . It is not necessary for the applicant to hold securities of its leased lines in order to operate its system, if, as it states, its leases are in perpetuity. . . . If it should be thought desirable to distribute the portion of surplus invested in such securities among the stockholders, the applicant would be able to apportion the securities themselves or distribute the proceeds thereof. They are neither property used or useful in rendering the public service, nor an assured part of any surplus." It might appear that it was from the commission that the Lackawanna got the idea which it later embodied in the Lackawanna Securities Company plan.

Next, keep in mind that the Lackawanna is a road of exceeding wealth. Indeed, its stock is so high in price that its merger possibilities are practically nil. Other roads, apparently, cannot pay the price necessary to acquire it nor presumably do they find it desirable or want to go into the banking business. Furthermore, even if the \$92,000,000 of bonds are turned over to the securities company the road would still have a surplus of \$45,000,000, equivalent to about \$26 a share on its \$50 par value stock. What does the examiner have to say on this point? "While it is true," he says, "that the Lackawanna holds these properties under leases that are equivalent to leases in perpetuity, its tenure depends upon its ability to maintain its earnings at a point sufficient to pay dividends on the stock and interest on the bonds of the lessor companies at the rates fixed in the leases. Although it is remote, there nevertheless exists a contingency of losing these properties. . . . The contingency mentioned might become an actuality should this policy be continued and should prolonged periods of stress because of strikes, or other causes, reduce the Lackawanna's earnings to the point where they would be insufficient to pay the rentals."

Apparently the examiner states his views incorrectly. Is he really worried for fear the Lackawanna may some day fall upon adversity or is he concerned because the road and its stockholders are too prosperous and because the latter have really found it possible to make some money by investing their funds in the railroad industry?

Seaboard Proves Value of Signals

Automatics reduce average running time of freight trains 56 minutes on 95-mile district



Head-block Color-light Automatic Signal at Wake Forest, N. C.

THE Seaboard Air Line has found that on one 95-mile engine district automatic block signals have reduced the average running time of trains, eliminated many train stops, reduced accidents, eliminated operators, and effected other savings which are evaluated at \$146,520 annually, equivalent to a 26.6 per cent return on the investment out of which to pay ownership expense. This result has been found as a consequence of a detailed study to determine the benefits derived from the installation of signals on 254 miles of single-track main line between Richmond, Va., and Hamlet, N. C., which were placed in service in January, 1926.

Character and Volume of Traffic

The nature of the traffic and of the competition with other roads in the area served requires that all the through trains, both passenger and freight, be handled on fast schedules, especially during the busy seasons. The winter schedule of passenger trains, operated from November 15 to April 15, includes seven through and one local passenger, and one express train each way daily. During this period several of the more important trains operate through from New York to Florida, being handled by the Pennsylvania from New York to Washington, by the Richmond, Fredericksburg & Potomac from Washington to Richmond, and from there south to both the east and west coasts of Florida by the Seaboard. These schedules are not only highly competitive, but "on-time" performance must also be maintained to make connections.

Likewise the bulk of the freight business in the busy season requires fast schedules. During the winter there is a heavy southbound movement of meats, food stuffs and other merchandise, while the northbound traffic in the late winter and spring includes perishable fruits and vegetables from Florida and later from Georgia and the Carolinas, the peach season extending until about the middle of July. Other

freight traffic northbound includes cotton, manufactured cotton products, furniture, fertilizers, lumber, etc., none of which can be classed as slow freight, and a considerable proportion of which is handled on fast schedules because of the practice of moving any train containing two or more cars of perishable shipments on perishable schedule. Besides food products and merchandise, the southbound traffic includes considerable coal for company and industrial purposes, building materials and highway construction materials.

Throughout the 10 months from November 15 to about July 1, the freight traffic is fairly heavy, while in August, September and October it is at a minimum. The traffic in January averages about 15 freight trains a day while in August this figure declines to about 10 trains. The increase in population and the widespread industrial and agricultural development of Florida and of all the southeastern states during the last few years are tending to balance the traffic except for the purely winter tourist traffic to Florida and the perishable fruit movement north.

Character of the Line

The main line of the Seaboard south from Richmond is joined at Norlina, N. C., by another important line from Portsmouth-Norfolk, Va.; while at Hamlet, N. C., 151 miles south of Norlina four lines diverge, the main passenger route continuing through Columbia, S. C., and the freight line via Charleston, S. C., while two other lines diverge to Wilmington, N. C., and to Atlanta, Ga. The 151 miles of single track between Norlina and Hamlet is, therefore, the "neck of the bottle" for the system although the line north to Richmond is also very busy. The line from Richmond to Hamlet was, therefore, selected for the first installation of automatic signals on this road.

This line traverses a somewhat hilly and undulating country with comparatively easy curves and many short grades in each direction. The line may be termed a

one per cent grade line although the ruling grade on one or two long hills, from four to seven miles long, in each direction, establishes a ruling grade of 1.1 per cent. Throughout the majority of the territory the rail is 100 lb. and the track is maintained in condition to permit passenger train speeds up to 50 m.p.h.

Passing sidings with a capacity of 100 cars are located an average of 5.4 miles apart, with a minimum spacing of 3.2 miles and a maximum of 9.4 miles. Prior to the installation of signals train movements were directed by time-table and train orders with manual block. Form "31" train orders were used, with absolute blocking from station to station in front of and behind all passenger trains, although freight trains were allowed to follow other freight trains on a caution card.

Having made all practical improvements in the track facilities, roadway and power equipment, the next step to better the train performance was to install automatic block signals. The line from Richmond to Hamlet with 234 miles of single track and 20 miles of double track, was, therefore, equipped with a-c. color-light automatic signals, the materials being furnished and the construction being handled by the Union Switch & Signal Company, and the installation being completed on different sections between December 1, 1925, and February 1, 1926. The control circuits are the modified absolute permissive block type, permitting following moves but preventing opposing movements. The installation was described in detail in the *Railway Age* for January 30, 1926.

How the Signals Improved Train Operation

After the signals had been in service for a few months it was evident to the operating officers that they were improving the operation of trains and eliminating train accidents. For example, the protection afforded by the signals permitted the use of the form "19" orders instead of the form "31" for all train orders, thus eliminating the necessity for many train stops. Also the space between following trains of all classes was reduced from an average of 5.4 mi. to the length of the automatic block, about 1.1 mi. Furthermore, while freight trains had been required to clear passenger trains at least 20 min. this time interval has been reduced to 5 min.

How the Study Was Conducted

In view of the fact that this was the first installation of automatic signals on the Seaboard and that two complete engine districts were so equipped at one time, the management was anxious to determine definitely the character and magnitude of the benefits, aside from the increased safety of train operation. A superintendent on the staff of the operating vice-president, as a part of his duties, was assigned to make a detailed study of the benefits accomplished by the signaling. The division operating officers co-operated in preserving the necessary records and accountants were assigned to compile complete data.

After the automatic signals had been in service for a year a study was made of four-month periods before and after the signals were installed in order to choose two weeks that were most nearly comparable and the last week in January, 1925, was chosen as comparable with the same week in 1927. On the 95-mile engine district, from Raleigh, N. C., to Hamlet, no changes in grade, passing sidings or important reassignments of power were made in the year prior to or subsequent to the placing of the signals in service; the results of this study are, therefore, based on actual cost data. The following discussion will, therefore, be confined to that North Carolina engine district.

In January, 1927, the assignment of engines for through trains on the North Carolina division was as shown in the table.

ASSIGNMENT OF ENGINES ON THE NORTH CAROLINA DISTRICT		
	Tractive effort lb.	Rating tonnage (adjusted)
Passenger Service		
19 Mountain type	48,200	1,350
Freight Service		
9 Santa Fe	65,300	1,950
13 Santa Fe	69,400	1,950
2 Mikado	54,700	1,550
14 Mikado-boosters	65,200	1,850

Benefits in Movements of Trains

As more trains were operated in the 1927 period the advantage is in favor of the period prior to the use of signals. In the week of 1925 selected for study an average of 14.8 trains was operated each day each way on the engine district as compared with 16.7 trains each way per day in the 1927 week, while the total train miles on this district increased from 9,975 in 1925 to 11,210 in 1927. In order to determine the actual time on the road, eliminating all terminal time, the recorded OS time at the offices nearest the terminals was taken and records were made of the running time of all trains between these points in the weeks being studied.

The average running time of through passenger trains between Raleigh Tower and Hamlet Yard in the 1925 period was 2 hr. 51 min., which was reduced 8 min. for southbound and 32 min. for northbound movements, or an average of 20 min. on each passenger train. As yet the through passenger train schedules have not been changed to take advantage of this saving but this extra time is utilized to advantage in making up time if required, or in permitting more flexible operation. For example, in March, 1925, only 88.13 per cent of the through passenger trains made schedule time on the North Carolina district while in March, 1926, after the signals were in service 96.4 per cent made schedule time.

As explained previously, preference is given to northbound freight, especially during the movement of perishable fruits and vegetables. The signals were, therefore, used to the best advantage for northbound through freight trains, reducing the average running time between Hamlet yard and Raleigh from 8 hr. 15 min. to 6 hr. 49 min. or 1 hr. 26 min. This reduction in time between terminals was the result of keeping the trains moving a greater percentage of the time by eliminating stops, making closer meets, etc., such that the average speed over the division was increased from 11.51 m.p.h. to 13.93 m.p.h., a difference of 2.42 m.p.h. Likewise the running time for southbound through freight trains was reduced from 7 hr. 58 min. to 7 hr. 31 min. or a saving of 27 min., the speed being increased from 11.93 m.p.h. to 12.64 m.p.h.

In order to make the market in New York the second morning perishable freight must be delivered to the Richmond, Fredericksburg & Potomac at Richmond before 4.20 p. m. Since the signals were placed in operation the 1 hr. 26 min. saved on the North Carolina district has been a factor in permitting the advancement of this time from 5.30 p. m. to 4.20 p. m. The time saved enables many deliveries to be made prior to 4.20 p. m. and also makes it possible to make up time on delayed trains.

One feature of the investigation was a detailed study of the train sheets to determine the number of train stops eliminated by the use of the form "19" train order in preference to form "31." Prior to the installation of automatic signals train movements were directed by

time table and train orders with manual block, maintaining an absolute block in any movement involving a passenger train. The form "31" order was used for all restricting movements. With the automatic signals as protection, the form "19" is now used for practically all movements, a change which eliminated so many train stops that for the two weeks under consideration the through freight train miles per train stop was increased from 15.2 miles to 18.8 miles, or the stops per through train were reduced from 6.11 to 5.23 southbound and 6.42 to 4.89 northbound.

Reductions in Operating Expenses

After the automatic signals were placed in service the necessity for operators at several intermediate sidings was eliminated because following trains could be operated with a spacing of the length of an automatic block with safety. At some of the towns the day operator was also ticket agent and at such points the men were retained, although at some of these points telegraph offices were closed at night. A total of 16 operators' positions were discontinued on the district, the maximum distance between train order stations being increased from 7.8 miles to 9.4 miles in the daytime and to 16.2 miles at night. A study of the payrolls for operators on the North Carolina district for the four months ending January 31, 1925, as compared with January 31, 1927, showed an average monthly saving of \$1,279 per month for the period after the signals were placed in service, as shown in the large table.

A study of data regarding locomotive, freight car, and passenger car mileage for the month of January, 1925, as compared with January, 1927, shows an increase of 11.2 per cent in the mileage of freight cars and an increase of 2.2 per cent in the mileage of passenger train cars. However, in spite of the fact that the business was heavier, the wages of engine and train crews for the month of January, 1927, showed a reduc-



Signal Protecting Rear of Train

tion of \$3,983 for straight time, \$6,153 for overtime and \$1,325 for allowances, or a total saving of \$11,461 in the month as compared with the same month of 1925. The saving in overtime is explained by the fact that in the week of 1925 the average running time for southbound freight trains was 7 hr. 58 min. and for northbound freight 8 hr. 15 min., to which is added at least 30 min. for terminal time, which in the majority of cases ran into overtime. Since the signals were installed this time has been reduced to 7 hr. 31 min. southbound and 6 hr. 49 min. northbound so that the over-

time is practically eliminated, effecting an average monthly saving for this item during December, 1926, and January, 1927, as compared with the same period two years ago, of \$6,153 per month.

The signal circuits are controlled by a switch circuit controller connected to the normally closed point of each main line switch and if the switch is loose or open $\frac{3}{8}$ in., the signals indicate stop. In view of the fact that this protection is provided, the switch lamps are not



Automatic Signals, with Staggered Marker Light, Between Passing Tracks

necessary, especially when the switch is near a signal. Another consideration is the fact that the switch lamp may be mistaken for the signal indication. Therefore, switch lamps have been removed from switches within 300 ft. of automatic signals, 55 such lamps being eliminated on the district, which resulted in a saving of \$165 per month for oil and labor. These lamps were transferred to other divisions not equipped with signals.

The reduction in the time on the road saved considerable locomotive fuel, as did also the elimination of train stops. Actual fuel records were available and after allowances were made for fuel that might have been saved by other factors such as fuel saving campaigns, a conservative figure of \$479 per month was arrived at as the actual saving in fuel resulting from the use of automatic signals. A further saving of \$26 was added for water and lubricants conserved. Furthermore, a check made of account No. 415, Clearing Wrecks, for the four months period ending January 31, 1927, as compared with the same period ending January 31, 1926, showed an average saving of \$120 per month after the signals were installed on the division.

The saving produced by the items mentioned total \$13,530 per month, from which should be deducted \$2,703 for the maintenance and operation of the signals as explained in detail in the large table. The net saving is, therefore, \$10,827 per month. It so happened that the division was provided with a stock of standby signal materials during the period studied so that the material charge was much higher than during any other month which stock if averaged over a long period would reduce the charge for this account from \$480 per month to about \$100, and would bring the charge for maintenance and operation down to about \$2,323, and increase the net monthly saving to \$11,207 per month or \$134,484 a year. This represents a saving of approximately 24.5 per cent on the investment for the automatic signaling, including the pole line, which is to be used also for station lighting, pumping stations, etc. The signal system and pole line represent the best materials and

type of construction, as can be understood from an article describing this installation as published in the *Railway Age* for January 30, 1926, page 323.

Damage Resulting from Train Accidents

The calculations so far have been based entirely on actual book charges for the period studied. However, in view of the fact that data are available on the average cost for past accidents these should also be considered. A check was made of train accidents which had occurred during the 10 years prior to January 1, 1926, and a

Table Showing Decrease in Expenditures Due to Automatic Signal—Richmond to Hamlet

	North Carolina District, per cent due to automatic signals	Virginia District, per cent due to automatic signals	Total per cent due to automatic signals
Decrease per month in wages of operators on lines affected by the automatic signals north of Hamlet	\$1,279	\$4,458	\$5,738
With an increase of 11.2 per cent in mileage of freight train cars and an increase of 2.2 per cent in mileage of passenger train cars, there was a decrease in wages of enginemen and motormen and trainmen in			
Straight time	3,983	274 (red)	3,709
Overtime	6,153	11,857	18,010
Allowances	1,325	1,049	2,374
Total, per month there was a decrease of 3.5 per cent in total train mileage. This decrease was all on North Carolina Division	\$11,461	\$12,632	\$24,093
Decrease in charges to account 415, clearing wrecks, average per month—for four months ending January 31, 1927, compared with four months ending January 31, 1925....	\$120	\$1,210	\$1,330
Saving per month due to switch lamps discontinued, number of lamps discontinued..... 55		89	144
Estimated saving in			
Maintenance	50	21	71
Oil	35	12	47
Cleaning and lighting.....	80	157	237
Total per month.....	\$165	\$190	\$355
Saving per month in			
Fuel for locomotives.....	\$479	\$718	\$1,197
Water for locomotives (purchased)	14	22	36
Lubricants for locomotives..	12	18	30
Deduct for repairs and electric current			
Supervisor—Raleigh	105	170	275
Clerk—Raleigh	48	77	125
Inspector—Hamlet	71	114	185
Maintenance men	1,100	1,700	2,800
Traveling expenses	160	240	400
Office expenses	80	120	200
Store expenses	48	77	125
Materials	480	770	1,250
Electric current	370	580	950
Contingencies	241	350	631
	\$2,703	\$4,238	\$6,941

record was made only of those accidents which, according to the judgment of the staff superintendent, would have been prevented by automatic signals, properly observed. The average property and personal damages for these accidents for the 10 year period was \$1,003 per month, which is considered low, being \$16.31 less per mile of road than on the adjacent Virginia division. Since the signals were placed in service no accidents of this character have occurred.

Positive proof that the signals have prevented accidents is available in several instances. For example, the engineman of a southbound passenger train recently overlooked a train order instructing him to take siding at a certain station to meet a northbound passenger. The engineman who was supposed to take the siding, pulled by the heading-in switch and by the time the conductor had pulled the air and stopped the train, the rear of the train had passed the switch. In the meantime the north-

bound train had been stopped by the automatic signal; otherwise an accident would most likely have occurred. In the territory between Richmond and Hamlet during the year ending January 31, 1927, the automatic signals were responsible for detecting 27 broken rails, 12 open or loose switch points, 10 cars within fouling lines, and 5 derails misplaced on sidings. A considerable number of these cases were potential causes for accidents.

Therefore, if credit is given to the automatic signals only for the prevention of accidents on the basis of this conservative 10 year average, the monthly net saving will be increased from \$11,207 to \$12,210 per month, or a return of \$146,520 per year on the investment.

Data on the Virginia Division

Complete data were also compiled for the engine district on the Virginia division of 152 miles from Richmond to Raleigh, on which district the saving per month was \$19,248, less \$4,238 for signal maintenance, leaving \$15,010 net per month.

In the above figures consideration has been given to the fact that five additional passing tracks, four passing track extensions and an interlocking plant were provided and placed in service on this district at the same time the signals were completed. The local division officers contend that these facilities should not be deducted from the estimated benefits but in order to be conservative it was decided by the staff superintendent to credit 20 per cent of the savings to these siding changes. Therefore, deducting 20 per cent from \$15,010, leaves \$12,008 per month credited to the signals.

The accident record on this division for 10 years prior to January 1, 1926, showed a monthly expenditure of \$4,084 for property and personal damages on account of train accidents that in the judgment of the staff superintendent would have been prevented by automatic signals, properly observed, which, added to the \$12,008, brings the total saving to \$16,056 per month or \$192,672 per year, which is at the rate of 21.5 per cent on the investment for the signals and pole line. Without giving consideration to the passing track changes this percentage would be 25.6 per cent.

Results Justify Further Signal Installations

The Seaboard Air Line has been so well pleased with the results obtained from the Richmond to Hamlet installation of automatic signals that signals have since been installed from Savannah, Ga., to Jacksonville, Fla., 138 miles, and from Jacksonville to Baldwin, Fla., 18 miles, the first section of which was placed in service February 1, 1927, and was completed about May 1. This division is similar to the North Carolina division in that it handles all the freight and passenger traffic, from Savannah to Gross, Fla., 31 miles from Jacksonville, where a cut-off runs from Gross to Baldwin. On this division 72 operators' positions were discontinued. At Coleman, Fla., 111.5 miles south of Baldwin, lines diverge to the east and west coasts of Florida, and traffic on the 88-miles section was increasing so rapidly that authority has been granted for automatic signals from Starke to Coleman, and it is planned that these signals will be in service by January 1, 1928, in time to be of benefit during the heavy winter traffic season.

The automatic signals on the Seaboard are installed under the direction of W. D. Faucette, chief engineer, and E. A. Frink, principal assistant, with the engineering and supervision handled by F. H. Bagley, signal engineer. The *Railway Age* is indebted to them and also to O. R. Teague, superintendent of the staff of M. H. Cahill, vice-president in charge of operation, for the information contained in this article.

Rehearing on Depreciation Asked

Railroads desire more complete consideration of new system of accounting

WASHINGTON, D. C.

COUNCIL for the Presidents' Conference Committee on Federal Valuation of the Railroads have filed with the Interstate Commerce Commission a petition for a rehearing on the commission's order of November 2, 1926, in which it prescribed a system of depreciation accounting. On April 19 the committee had submitted to the commission a request for a postponement for one year of the effective date of the order, for the purpose among other things, of allowing it to present a petition for a rehearing, and the commission on May 2 postponed the date for a year.

The original hearing, the petition says, was comparatively brief and was not exclusively confined to steam railroad carriers; the testimony offered on behalf of the steam railroad carriers was of a general character and did not include a statement of many matters of detail which, in the light of the order, now appear to the carriers to be necessary to be brought to the attention of the commission.

The original hearing, it is asserted, was understood by the steam railroad carriers to be confined to a consideration of the establishment of depreciation charges in the future and to whether the cost of a property consumed in operation, which cost was admitted to be an operating cost, should be charged in bulk at the time of retirement, or anticipated by periodical installments in a depreciation reserve throughout the period of its service life. Such matters as past accrued depreciation and restatement of property investment accounts of steam railroad carriers were not understood to be before the commission and no evidence with respect to them was introduced by the steam railroad carriers or by other parties.

"The said order affecting, as the report concedes, a radical change in present methods of accounting, and upsetting, as it does, a system of accounting followed and approved by the commission ever since it came into existence, merits and requires," in the opinion of petitioner, "a more complete presentation in detail of the views and the evidence of the steam railroad carriers on the effect of the proposed new system of accounting than was possible of presentation at the original hearing under the conception and understanding at that time of the scope and extent of said hearing.

"Petitioner desires the opportunity to show that said order is based upon fundamental errors of both law and fact and to point out that it includes and covers provisions injuriously affecting, if carried into operation, the interests and rights of steam railroad carriers, some of which were not considered or discussed preceding the making and filing of the order." Among the errors of law and of fact upon which, in opinion of petitioner, the report and order rest and which, together with other phases of the order, should be given further consideration by the commission, are the following (somewhat condensed):

Errors in Order Seen by Carriers

(a) A serious question exists as to whether the language of the interstate commerce act with reference to depreciation accounting authorizes the commission to make a mandatory order. There are strong reasons for believing it does not, and an examination of the Congressional history of the legislation

clearly indicates the intention of Congress to only authorize and direct the making of depreciation accounting regulations which would not be of a mandatory character.

(b) The report and order confuse accounting depreciation and depreciation in valuation. Each is a separate and distinct thing from the other, but they are treated as being the equivalent of each other. The former is a pure operating expense and may be estimated on the basis of cost, while the latter affects the investment and must be determined as a fact on the basis of value.

(c) The order is based upon the assumption that accrued depreciation as ascertained by the commission in its valuation work, by reference to the loss of service life in efficient units of property composing a railroad, must, under the decisions of the courts, be deducted in the ascertainment of value, and therefore that such character of depreciation should be anticipated and set up in the accounts of the carriers. This assumption is based upon a mistake of law as to what constitutes depreciation in valuation, the overwhelming weight of judicial opinion being that only observable deterioration or, actual, tangible depreciation is to be deducted in the determination of value.

(d) The courts condemn the use of "assumed probabilities" for the determination of depreciation in valuation. To estimate the remaining life of a property unit by an inspection of it in order to determine depreciation affecting value, is to resort to an "assumed probability," just as it is to estimate such remaining life by reference to a mortality table.

Depreciation Not to Be Deducted from Valuation

(e) The report concedes that the cost of worn-out or abandoned property units is a part of operating expenses to be charged against the service and that the cost of property consumed in operation is plainly a part of the cost of rendering service. It follows, therefore, that moneys accumulated out of earnings under lawful rates for services rendered, in advance of the retirement of such property, for the purpose of paying the cost of retirement when made, are moneys for the payment of operating expenses, and are the property of the railroad, and the amount of same may not be deducted from the value of the other property of the railroad in the determination of the property value on which the railroad is entitled to earn. The report and order go far beyond a decision of the question presented at the original hearing of how an admitted operating expense should be shown in the accounts, and decide in express terms that an essential and necessary part of the plan for depreciation accounting as set forth in the report and order is that the "accrued depreciation" represented by the depreciation reserve required to be set up, shall be "deducted in-determining the amount on which the company is entitled to a fair return." Such deduction, in the opinion of petitioner, being unauthorized by law, and the report asserting that if such deduction be not permitted by the courts a reconsideration of the entire question of depreciation accounting will be necessary, petitioner suggests that such reconsideration be had before the order becomes effective.

(f) The report justifies the order upon the ground, among others, that it is a necessary measure of self-protection to the carriers because of the deduction of "accrued depreciation" under the commission's conception thereof in the determination of value, but petitioner suggests that the protection to which the carriers are entitled in this regard is the limiting of the amount of depreciation deducted in valuation to the observable deterioration, or actual, tangible depreciation as defined by the courts, petitioner, of course, maintaining that the cost of properties consumed in operation is a cost of operation, and under any system of fair and reasonable regulation must always be so recognized and provision therefor made in operating expenses.

Maintenance

(g) The inflexible character of the order in requiring uniform charges from year to year for maintenance expenses is of doubtful validity, because it borders upon, if it does not enter, the domain of management, which is beyond the power of the commission. In addition, this phase of the order will, in the opinion of petitioner, prove hurtful and injurious to the carriers in the conduct of proper financial policies, and should receive further consideration at the hands of the commission. Hereto-

fore the managements of the carriers have recognized the fact that the vicissitudes of business require that maintenance expenses, in so far as postponable replacements are involved, vary from year to year, and that in lean years less money may properly be expended for maintenance than in good years. . . . If the depreciation reserves required to be set up under the order are actually expended, the result may be that the earnings of the carriers in lean years will be depressed to points where investors will be alarmed and security values will be disturbed, while in good years, owing to the maintenance of the same standard of depreciation expenditures as in lean years, the results may appear by comparison to be highly fortunate with consequent inflation of security values. . . . If, upon the other hand, the expenditures are not actually made, as under the order may be the case, the accounts of the carriers will not reflect the actual condition of the property and will become misleading both to the commission and to the investing public. The ultimate result of the order will, in the opinion of the carriers, be to create large depreciation reserves whose magnitude will not afford any real measure of the condition of the property. They believe that this phase of the order should receive further consideration from the commission, and that if the commission has concluded, or shall conclude, that the operating expenses involved in the cost of consumed properties shall be shown in the accounts of the carriers through some form of a reserve, that a smaller reserve be required than that prescribed by the order, and that a more flexible method for its creation be devised.

(h) The requirement that the carriers set up depreciation reserves on the straight-line, life-use basis for their units of depreciable properties, whether set up by units or by groups of properties, will result in the accumulation of excessive and unnecessary reserves, which will unduly burden the costs of operation. Further consideration should also be given to the difficulties attendant upon, and as well as to the impracticability in very many instances, of estimating with accuracy, or with even approximate accuracy, future service lives, which difficulties suggest the desirability, and petitioner believes the necessity, of determining the amount of depreciation reserves, which in effect are nothing more than retirement reserves, if they are to be set up, upon some more reasonable and practicable basis than the service lives of the units of property.

Burden on Patrons

(i) The report in speaking of the effect of the order, says: "In time the net burden upon patrons will be less under the depreciation method than under the retirement method." and again says that one of the purposes of depreciation accounting is to hold "depreciation charges down to a more moderate basis." The saving to patrons, however, is to be accomplished, not by reducing the cost of properties consumed, which cost, assuming that service lives are properly estimated, the report says "will be the same whether it be charged in bulk when the unit is retired or whether it be spread in installments over its service life," but is to be accomplished by reducing the value of the properties through a deduction therefrom of the amount of the depreciation reserve and thereby "the return upon investment which patrons are under obligation to provide." This theory of the effect of the order seemingly looks to a confiscation of the value of the property of the carriers in order to effect a saving in rates to patrons.

Past Depreciation

(j) In the matter of what the report calls "past depreciation," it is stated in the report that as a rule depreciation accounting has not in the past been observed with respect to fixed property and that to concurrently credit the amount of "past accrued depreciation," which has not been provided for to the depreciation reserve, charging it to profit and loss, might in some and in perhaps many instances, result in converting a profit and loss surplus into a deficit with a consequent impairment of credit. Nevertheless the said report and order direct that such "past depreciation," under the concept thereof contained in the report and found to exist on the effective date of the order, shall be credited to the depreciation reserve and concurrently charged to a suspense account on the assets side of the balance sheet instead of to profit and loss, the report and order providing that such suspense account may be gradually extinguished by charges to profit and loss over a maximum period of years, or in such shorter time as the carrier might elect. Petitioner submits that accounts kept in accordance with law and the regulations promulgated by the commission are closed as to the periods to which they relate, and that no authority has been conferred upon the commission to review and discredit these closed accounts for the purpose of setting up in the balance sheets of today items not derivable therefrom. Nothing in the language of Section 20 of the interstate commerce act in this regard can be construed to have a retroactive effect. . . . It seems to be the plain intent of the statute that

any order made thereunder should be prospective only and operative concurrently with the incurring of the operating expense to which it is applied. Aside from the very serious question as to the power of the commission to give to the statute a retroactive effect, there is further involved in this provision of the order the possible and probable disastrous results under the order to the surpluses of the carriers, which surpluses, in the cases of some carriers would be entirely wiped out, and in the cases of others seriously impaired, with all the harmful consequences to the credit of the carriers to result therefrom. The application and enforcement of the order in this particular will, in addition, produce greatly varying and highly inconsistent results as applied to the accounts of individual carriers. . . . It is well known that carriers have never had rates for service allowed them sufficient to enable them to accumulate the large depreciation reserve here required to be set up by them, and careful consideration should be given to the fairness and justice of burdening future profit and loss accounts with the payment of this large depreciation reserve covering "past accrued depreciation." . . . Consideration should also be given by the commission to the fact here alleged by petitioner that the setting up of this large depreciation reserve, as required by the order, will state an enormous liability of the carriers where in fact none exists, because the "past accrued depreciation" it is designed to cover is purely theoretical and not actual, and the reserve can never be expended to overcome it. The amount of the reserve determined on the straight-line basis as required by the order will remain fairly constant because no liabilities will mature in sufficient amounts to cause its depletion. For these and other reasons the setting up of the reserve to cover "past accrued depreciation" and the restatement of the investment account, as required by the order, will be injurious and unjust to the carriers, and in addition wholly unnecessary as a part of any regulation of proper depreciation accounting.

Extraordinary Repairs

(k) The provisions relating to what the report calls "extraordinary repairs" are, in the opinion of petitioner, impracticable and impossible to be complied with on any reasonable basis. The order prescribes no definite criterion by the use of which a distinction between ordinary and extraordinary repairs may be applied. . . . There are no records available on which to base a study of the history of extraordinary repairs and the effect thereof on the service life of the property in connection with which incurred. . . . It is essential to the practical working of any order making a classification between ordinary and extraordinary repairs, to clearly define each class in sufficient detail to enable ready application of the distinction to be made.

The order provides that the cost of extraordinary repairs shall be charged to the depreciation reserve. It provides in paragraph (b) page viii and also in the first paragraph on page ix that upon the retirement of property its service value shall be charged to the depreciation reserve. The definition of "service value" for certain kinds of property—paragraph (c) page 351—includes the cost of extraordinary repairs. The order therefore seemingly provides for a duplicate charge to the reserve for the cost of extraordinary repairs.

Application of Order to Leased Lines

(l) In the opinion of petitioner, full consideration has not been given to the serious and difficult questions which of necessity must arise in the application of the order to the property of leased lines. A large part of the railway mileage of the country is, as is well known to the commission, operated under leases obtained from railroad companies, which companies in some instances, because of such leasing of their properties, are no longer common carriers and over whom the jurisdiction of the commission with respect to accounting may be of a much more limited character than such jurisdiction over operating companies. The problem presented by the present order involves settlements between lessor and lessee companies and in what manner and by what authority the lessee carrier can set up depreciation on the property of the lessor company. It certainly cannot set up such depreciation unless it happens through stock ownership to be in control of the board of directors of that company. If such control does not exist, it is not perceived in what manner the lessee carriers could control the accounting of the lessor company. If the lessee cannot control such accounting, it is not perceived what useful purpose could be served by the lessee setting up on its own books an amount of depreciation attributable to the leased property. . . . To give proper consideration to this feature of the order will necessitate the presentation to the commission of at least a considerable number of leases of important lines of railroad, together with analyses of contractual obligations imposed on lessees by such leases.

(m) The report and order direct (Finding 8, Report 378) that depreciable property as defined (other than equipment) installed prior to July 1, 1914, shall be depreciated by primary

accounts using 1914 prices, as shown by the Bureau of Valuation in its valuation inventories, and the question arises as to whether this provision is based upon a correct accounting principle. It is contradictory of the statement in the report (344) that:

"It is agreed by all that depreciation expense should be based primarily upon the original cost to the accounting company of the unit of property in question."

Consideration should be given to the question of whether accounting depreciation, as the order conceives it, should be estimated upon the basis of original cost or of present value, and if original cost is adopted as the base, whether such cost should be determined by reference to the original cost of the property at the time of its installation, or by reference to the cost of road and equipment shown on the books of the accounting carrier or by reference to the 1914 prices as ascertained by the Bureau of Valuation, or by some other method. Further consideration should also be given to the question of whether the setting up of depreciation reserves by groups of property, rather than by units, regardless of the base adopted, will produce equitable, proper and appropriate results, serious doubt existing that they will do so.

(n) The order directs that the total of the primary depreciable accounts determined by the use of 1914 prices shall be deducted from the lump sum carried for road and equipment in the accounts of carriers and the remainder treated as an unadjusted item in the investment accounts of the carrier, representing all other primary accounts, and further directs that if after such deduction is made the remainder shall prove to be a minus or a plainly inadequate quantity the amounts entered in each of the primary depreciable accounts shall be proportionately reduced to the extent necessary to avoid such result. This procedure the report admits is arbitrary, and it is obviously illegal.

(o) Further consideration should be given to the matter of setting up depreciation reserves for the track, and particularly in the matter of track material such as frogs, switches, joints, tie plates, track bolts, track spikes, and other miscellaneous small track material. It would seem to be unnecessary and burdensome, even though practicable, which is doubtful, to set up depreciation reserves for rail, ties and ballast, but aside from this consideration, investigations which have been made disclose it to be entirely impracticable to cover the small miscellaneous track material in a depreciation reserve, because of the impracticability of maintaining such a record as will enable the carriers to identify material of this character when taken out of track in such a way as to establish the price at which it was applied.

(p) Further consideration should be given to the inconsistency and as well the injustice to carriers involved in the admitted failure of the order to provide depreciation reserves for all properties depreciated by the commission in the ascertainment of cost of reproduction less depreciation in valuation.

The purpose of all the foregoing is said to be to bring to the attention of the commission, in a somewhat general way, the scope of the rehearing sought by the steam railroad carriers, and at least some of the important matters which should have further consideration at a rehearing. The enumeration of these matters is not intended to be exclusive, but on the contrary it is anticipated that on the rehearing other matters will be suggested, perhaps by the carriers generally, and perhaps by individual carriers separately. It is therefore, asked that the commission formally reopen for further hearing all of the provisions of the order and of the findings and conclusions of fact therein so far as they relate to steam railroad companies, in order that opportunity may be afforded to any carrier to present, within reasonable limits of time, any objection which it may have to any part of the order.

The New York Central Lines also filed a separate petition for a rehearing, saying that they "do not agree with the methods, rules and principles which the commission has employed in this proceeding and also in the valuation proceedings for the purpose of estimating the depreciation of their property," but that they expect to present at appropriate hearings on the valuation the reasons for their objections and therefore "would not expect to prolong the rehearing of the present matter with any extended presentation of this branch of the subject."

B. of L. E. Convention

THE fifth triennial convention of the Brotherhood of Locomotive Engineers, which has been in session at the brotherhood's headquarters, Cleveland, Ohio, since June 6 and has not yet completed its deliberations, will probably go down in history as one of the most important that this organization has ever held. In attendance at this year's sessions are approximately 420 delegates representing 916 divisions comprising the brotherhood's total membership of 90,000, of which approximately 60,000 are men actively engaged in locomotive running service.

As a labor organization the affairs of the brotherhood were previously controlled by a grand chief engineer. At the 1924 convention, in view of the increasing importance of the brotherhood's financial activities, it was decided to change the constitution in such a manner as to provide for a president, two vice-presidents and a secretary, which officers would be charged with the direction of the activities not only of the organization as a factor in organized labor but its financial activities as well. During the past few years the brotherhood has extended its activities in several directions, probably among the most prominent of which are the development of large real estate holdings at Venice, Florida, and the Coal River Collieries Company. As long as four years ago those responsible for the affairs of the brotherhood, particularly in relation to financial interests, realized the necessity of injecting into their organization men who had been especially trained in handling banking affairs. As a consequence the original banking organizations have been gradually reinforced by the introduction of outside men who have had banking experience. In the opinion of many the rapid growth of the banking interests has probably exceeded the capacity of the officers of the brotherhood whose experience had not particularly fitted them to handle a financial enterprise of such magnitude. This is said to be responsible to a large extent for the fact that the brotherhood's officers have at times been in a receptive mood toward the suggestion to divorce the banking end from the affairs of the labor organization and place them in the hands of interests better equipped to handle them.

These conditions, coupled with the fact that some of the outside operations in which the brotherhood has invested its funds, have not been as successful financially as was originally hoped, have culminated during this convention in what might be termed a loss of confidence on the part of the brotherhood's membership in the officers who have directed the affairs during the last three years. For that reason the convention voted to abolish the offices of president, first and second vice-presidents and secretary, which automatically places the control of the brotherhood's activities with the grand chief engineer—reverting thereby to its former form of organization. As a result, early last week Alvanley Johnston was unanimously re-elected by acclamation to the office of grand chief engineer to control absolutely the affairs of the brotherhood.

One of the difficulties in the functioning of the organization as it has existed during the past three years has been the fact that its general officers have been obliged not only to function as executives of a labor organization but also to control the financial and banking activities as well. Under the new organization, as provided for at this convention, the activities of the two branches will be entirely separated. In line with this arrangement three trustees have been elected to supervise the brotherhood's financial interests. This board

of three consists of: S. H. Huff, Roanoke, Va., who has served as assistant grand chief of the brotherhood since 1921. Mr. Huff will act as chairman of the board of trustees. Before being elected to the office in the brotherhood he was general chairman of locomotive engineers on the Norfolk & Western. The second member is J. C. McDermand, Great Falls, Montana, a locomotive engineer who also serves as president of the labor bank at Great Falls. The third member is W. O. VanPelt who will serve as secretary of the board of financial trustees. Mr. VanPelt whose home is in Pittsburg, Kansas, is general chairman on the K. C. S.

This committee is subordinate to the advisory board of the brotherhood. The advisory board under the new organization will consist of the grand chief engineer, acting as chairman of the board, and nine assistant grand chief engineers. So far, four of the nine remaining members of this board have been elected and are: T. J. Bissett, first assistant grand chief engineer; A. O. Smith; G. W. Laughlin; and E. W. Kruse. Five more assistant grand chief engineers remain to be elected before the close of the convention.

With the financial affairs of the brotherhood placed in the hands of the three trustees it is probable that T. J. Bissett, first assistant grand chief engineer, will devote his on tire attention to the labor problems of the organization as well as the insurance and pension departments, which latter two departments have previously been supervised by first vice-president, H. F. Daugherty. In voting to abolish the four offices of the brotherhood previously mentioned, the incumbents of these offices have been charged with laxity and indifference in the handling of the brotherhood's affairs. There has, however, been no charge made which would reflect upon the honesty and integrity of these men. It would appear that they are victims of circumstances which have been somewhat beyond their ability to control. As a consequence of these the brotherhood has been unfortunate in several business ventures and at the present time there are "frozen assets" said to amount to approximately four million dollars. Of this amount the B. of L. E. Co-operative National Bank is involved for somewhere between \$250,000 and \$400,000.

The convention voted to pledge the assets of the organization to guarantee the deposits of the brotherhood bank which, according to recent statements, amount to over twenty-one million dollars. It is the intention of the brotherhood to raise sufficient additional capital to permit the separation of these "frozen assets" from the other assets of the organization. At first a resolution was passed calling for a monthly assessment of five dollars from each of the 60,000 active members of the brotherhood for a period of two years which would eventually result in the acquisition of \$7,200,000 additional capital. Later reports indicate that this plan has not met with universal favor as a result of which it is now planned to issue certificates of deposit in amounts of \$120 or more bearing interest at the rate of 4 per cent per annum. These certificates of deposit would then constitute a voluntary contribution.

Grand chief engineer Johnston is credited with the statement that the B. of L. E. Co-Operative National Bank of Cleveland is financially in excellent condition and pointed to the payment of the recent semi-annual dividend amounting to 5 per cent on the bank's one million dollars' capitalization to substantiate this statement.

Two other actions taken by this convention that are of some significance are the withdrawal of the brotherhood's support of Labor, a weekly paper published by fifteen railway organizations in Washington and the abrogation the Chicago joint agreement with the Brotherhood of Locomotive Firemen and Engineers. For

some time there has been an increasing opposition on the part of the rank-and-file of the brotherhood, who are credited with being more or less conservative body of men, to the radical tenor of Labor's editorial policy. This paper has in the past been placed in the hands of every member of the brotherhood by blanket subscription, the discontinuance of which deprives Labor of a revenue from this source amounting to approximately \$67,000. By action of the convention in the abrogation the Chicago joint working agreement with the B. of L. F. & E., it is obvious that the Brotherhood of Locomotive Engineers desire to revert to its former position of organization independence as related to dealings with other labor organizations.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended July 2 amounted to 1,021,262 cars, a decrease of 44,379 cars as compared with the corresponding week of 1926 but an increase of 155,063 cars as compared with 1925. Decreases were shown in all commodity classifications except miscellaneous, the largest decrease being in coal, 27,385 cars as compared with the corresponding week of last year, although grain and grain products and ore each showed a reduction of over 6,000 cars. The Southern was the only district to show an increase. The summary, as compiled by the Car Service Division of the A. R. A. follows:

Revenue Freight Car Loading

Week Ended Saturday, July 2, 1927

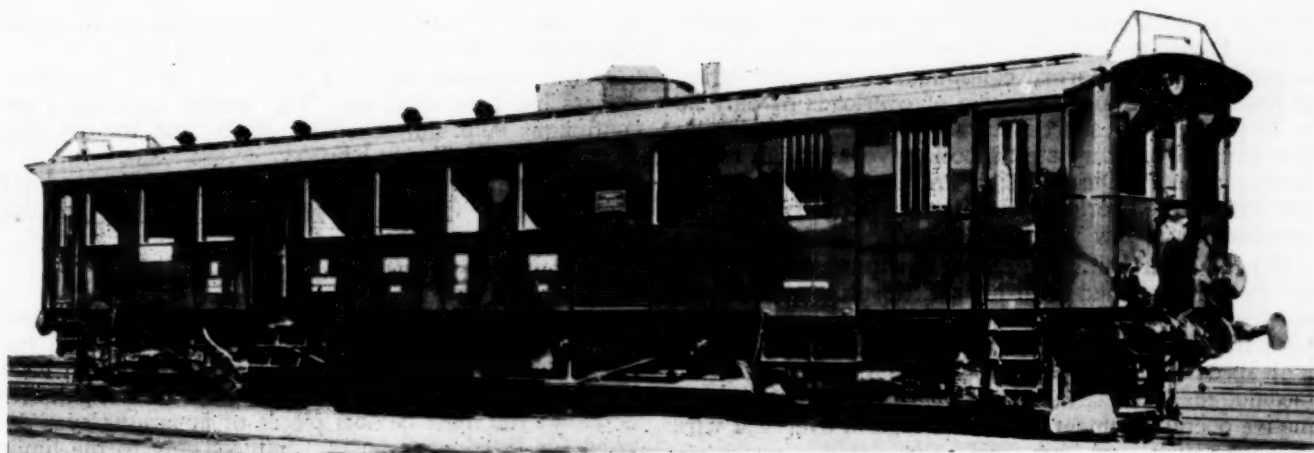
Districts	1927	1926	1925
Eastern	233,577	247,933	204,550
Allegheny	209,539	217,962	180,116
Poconantas	56,025	56,304	42,360
Southern	148,559	148,266	126,663
Northwestern	160,317	164,123	129,630
Central Western	142,436	152,472	118,839
Southwestern	70,809	78,587	64,041
Total Western Districts	373,562	395,182	312,510
Total all roads	1,021,262	1,065,641	866,199
Commodities			
Grain and grain products	44,133	50,814	33,954
Live stock	26,260	26,330	24,214
Coal	145,000	172,385	135,355
Coke	9,996	11,616	8,508
Forest products	67,642	70,696	58,762
Ore	66,197	72,904	55,127
Mdse. l. c. l.	260,579	261,858	225,020
Miscellaneous	401,455	399,038	325,259
July 2	1,021,262	1,065,641	866,199
June 25	1,018,206	1,055,362	993,173
June 18	1,016,351	1,036,643	984,583
June 11	1,028,305	1,052,471	989,873
June 4	911,298	944,864	998,243
Cumulative total, 27 weeks	26,347,988	26,074,792	25,194,689

The freight car surplus for the last week of June averaged 274,223 cars, a decrease of 7,479 cars as compared with the preceding week, including 81,330 coal cars, 147,831 box cars, 21,937 stock cars and 15,461 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended July 2 showed the effects of the holidays on July 1 and 2, there being a decrease of 12,704 cars from the previous week and of 4,744 from a year ago.

Commodities	Total for Canada			Cumulative totals to date	
	July 2, 1927	June 25, 1927	July 3, 1926	1927	1926
Grain and grain products ..	5,281	5,607	5,580	188,666	182,727
Live stock	1,360	1,654	1,778	50,356	51,567
Coal	5,698	7,229	5,803	164,121	126,074
Coke	218	277	333	8,333	10,479
Lumber	3,613	4,682	3,794	93,515	92,174
Pulpwood	2,000	2,750	2,564	100,625	79,035
Pulp and paper	1,866	2,399	2,132	58,214	65,458
Other forest products	2,515	3,253	2,982	83,253	87,116
Ore	1,975	1,882	1,811	39,731	40,387
Merchandise, l. c. l.	13,881	17,847	14,846	434,571	410,621
Miscellaneous	13,213	16,744	14,741	347,911	339,434
Total cars loaded	51,620	64,324	56,364	1,569,296	1,485,072
Total cars received from connections	33,752	36,940	35,681	1,002,044	971,034



A Type of Rail-Motor Car Used in Europe

Diesel Traction for Railroads*

*Increased production and closer attention to design
should reduce the cost and weight
of the Diesel locomotive*

By William Arthur

Manager, Traction Division, American Brown Boveri Electric Corporation, Camden, N. J.

THE development of the Diesel oil engine has introduced new possibilities and many railroads are utilizing this latest form of traction, employing Diesel engines carried on the traction unit itself. More than 50 Diesel locomotives and rail cars are already either in use or under construction in different parts of the world, so that the "Dieselizing" of railroads may be said to be already started.

In the most usual case the traction unit consists of a Diesel engine driving an electric generator, which in turn is connected to electric motors carried on the trucks in a manner similar to that employed in ordinary electric rail cars or locomotives. In other cases the drive is through gears. The advantages of "Dieselizing" certain railroad services may be summarized as under:

Elimination of Smoke and Noise—The Diesel unit shares these advantages with its electric rival, and with good design operates smokelessly and without undue noise under all working conditions. It therefore possesses advantages for terminal work and for use in switching services in locations surrounded by valuable residential property, similar to those enjoyed by electric traction units.

Elimination of Terminal Delays—The need of elaborate coaling and water stations, ash pits, etc., together with the apparatus and services dependent upon these features, is eliminated. The Diesel unit is ready immediately for service, and no time is lost in getting up steam or in the various other hostling services so necessary with steam locomotives. In this again it is similar to the electric locomotive.

Economy of Installation—When compared with straight electric traction the need of expensive power

stations, substations, transmission lines, and overhead or third-rail contact systems with their accompanying costs and dangers to life, is done away with. The Diesel unit is self-contained; it carries its power station on its own back. The economics in each case have to be separately studied, but the advantages of the new form of traction, particularly for branch lines and for switching services, are already well demonstrated in this country and in Europe, and larger units are now being introduced into main-line road services.

Fuel Economy—The fuel cost, which of course with all forms of traction is one of the major items of expense, is much reduced and works out in round figures for the same service as follows: the steam locomotive 100 per cent; the electric locomotive, 50 per cent; and the Diesel locomotive, 20 per cent. On the basis of thermal efficiency at the rail: the steam locomotive 5 to 9 per cent; the electric locomotive with modern power station and transmission systems, 10 to 12 per cent; and the Diesel-electric locomotive, 22 to 25 per cent.

The problems that arise in connection with Diesel traction apparatus come under two general headings: operating problems and problems of design and general arrangement.

Of course these matters are closely related, in fact in practice they cannot be separated; nevertheless for the sake of clarity the author will herein discuss them separately.

Operating Problems

Diesel traction differs from electric traction in that with the latter where energy is taken from an overhead wire or third rail, there is usually a large power plant to draw from and from which, for short periods, large overload demands can be made, whereas with the former

*Abstract of paper contributed by the Railroad Division and presented at the spring meeting of the American Society of Mechanical Engineers, White Sulphur Springs, W. Va., May 23 to 26, 1927.

there is a definite limit fixed by the horsepower capacity of the Diesel unit itself. In practice, a Diesel engine is given a certain normal continuous horsepower rating at normal speed and is capable of overloads of only 20 to 25 per cent for short intervals. It shares this limitation with the ordinary steam locomotive, although recent developments in Diesel design are tending to remove it and extend the overload capacity to a point thought impossible only a few years ago.

On the other hand, the Diesel unit possesses the ability (when combined with an electric transmission system) of translating its full rated horsepower into either high tractive force at low speed, or into the equivalent high speed at lower tractive force. In this, like the steam locomotive, it is markedly superior to the electric locomotive operating under a fixed voltage in overhead wire or third rail.

Summarizing this portion of the paper, it may therefore be said that the Diesel-electric locomotive possesses most of the advantages of both steam and electric locomotives, but without some of the disabilities of each.

Problems of Design and Construction

Diesel locomotives and rail cars in the past have been notable for their relatively large weight and consequent high cost, amounting in certain instances to from two to three times that of an equivalent steam locomotive. This condition has arisen from two general causes. First because no Diesel engines had heretofore been developed specially for traction purposes and the locomotive designer was forced to take some existing relatively low-speed and heavy unit designed originally for submarine or stationary purposes and utilize it for traction. Similarly for the electrical requirements, generator, motors, etc., with consequent increase in the weight of all contributory apparatus such as mechanical structure, trucks, frames, etc. Secondly, it has been thought sufficient to simply take a Diesel engine, a generator, motors, and control, together with the necessary fuel and other storage tanks and apparatus, locate and connect them together in a suitable mechanical frame and call the result a Diesel locomotive. In consequence, weights have reached as high as 400 lb. per b.hp. as compared with less than half of this amount for an equivalent steam locomotive. Even in one of the best and most successful recent American designs, employing a 600-hp. Diesel engine, the total weight is 100 tons on the drivers, giving 333 lb. per b.hp., or only 6 hp. per ton on the drivers.

In certain instances, where the service for which the locomotive is designed is one wherein large tractive force at relatively low operating speeds obtains, i.e., in switching services and where weight is necessary for adhesion purposes, these high weights per horsepower may be justified; but even in these cases it is doubtful if a substantial decrease in weight would not increase the "liveliness" of the unit—a characteristic most useful and necessary in such services.

The author has just completed designs for a number of Diesel-electric locomotives for use on American railroads in which he has endeavored to avoid these deficiencies and limitations. He has utilized a Diesel unit specially designed for traction work, by close regard to the interdependence of parts, i.e., by using the Diesel frame in part to support and supplement the main locomotive frame by designing and dovetailing the Diesel engine and its generator into a composite unit, thereby shortening the length of the whole locomotive. In other words, by coordinating and combining the best American and European practice, we obtain the unit shown in

the drawing. The principal dimensions and characteristics of this locomotive are shown in the table.

It will be noted that 14.5 b.hp. per ton of weight on drivers has been obtained. The weight on drivers per continuous b.hp. developed is 138 lb., and for the total locomotive, 185 lb. per b.hp.

The locomotive is designed for road service and for use in either freight or passenger duty by suitable changes to the gear ratio.

The Transmission Problem

The Diesel motor is a prime mover which cannot start itself. It has to be started by auxiliary means and run up to a certain speed, after which it will maintain itself in motion. As already pointed out, a steam locomotive is one of the most flexible pieces of apparatus ever devised for traction purposes. Subject only to the limits of its steaming capacity, it can translate its horsepower into either tractive force or speed to any reasonable degree desired, merely by varying its cut-off and mean effective pressure. It can exert its maximum tractive force right at the start and when it is most needed, and then later when the train is once accelerated, can utilize its full horsepower in the form of reduced tractive force and increased speed. To a lesser degree, as explained, the electric locomotive can do the same, but the direct-connected straight Diesel locomotive cannot. It is necessary to interpose between the Diesel main shaft and the wheels some form of transmission device to make up for this inherent deficiency of the Diesel motor. In this connection it may be mentioned that much developmental work is in progress in Europe and elsewhere looking to extend the flexibility of Diesels, and that substantial gains have already been made.

There are five general methods of transmitting the torque from the prime mover to the wheels. These are:

- 1—By direct mechanical drive through a clutch or clutches.
- 2—Through mechanical gearing.
- 3—Through hydraulic gearing.
- 4—By mixed systems in which either steam or compressed air is used to augment the flexibility of the Diesel unit at starting.
- 5—By electric transmission.

Direct Drive is not practical because of the reasons above referred to, although several attempts have been made to utilize it. The Sulzer Company built a locomotive with direct drive but it was not successful; others have tried it and failed, and we can safely dismiss further consideration of this method.

Mechanical Gearing is practical, but at present is limited to smaller apparatus, say, below 300 hp., because of the very heavy stresses on the gear teeth, particularly when a train is suddenly started; and also because of the difficulty in designing a clutch which will cope successfully with these large forces. Possibly progress will take place in this direction in the future, for many interesting and courageous experiments are under way in the United States, in France, Switzerland, Germany, and elsewhere. It would be going too far afield to enumerate these.

Hydraulic Gearing offers possibilities and usually consists of a number of primary pumps or pistons delivering oil under pressure to a series of secondary pumps or pistons, the stroke or cubical dimensions of which can be varied at will, thereby permitting an infinite variety of speed changes. There are many types, of which the Lentz, the Hele-Shaw, and the Schneider are the best known. The Schneider gear, developed by the Swiss Locomotive Works at Winterthur, is one of the best. A 500-hp. unit weighing 11 tons has been built and has an efficiency of 85 per cent. Bigger sizes up to 1600 hp. are, it is claimed, practicable. Such apparatus is, however, quite heavy and expensive, and has not yet been

tried out on any large scale. There are unsolved problems with regard to free coasting, reversing, etc. Developmental work is still in progress. The fact that so many new types and variations of the same basic idea are being produced, none of which gets very far, is indication that the problem is not yet completely solved.

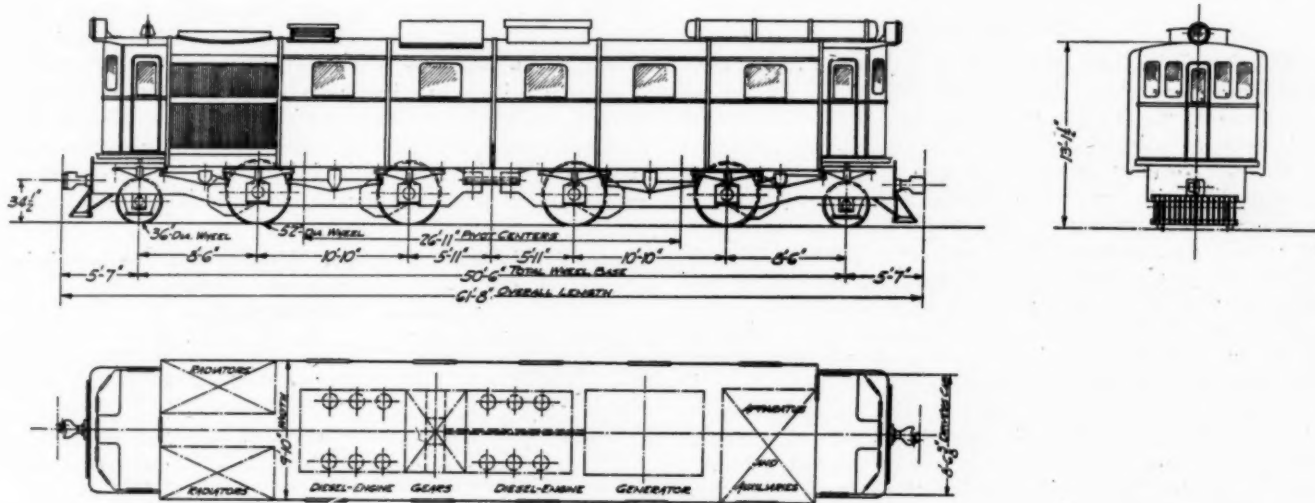
Special forms of Mixed transmission systems have been developed and are being tried out. These are the Still System in England, whereby steam (from a steam boiler) is used to supplement the Diesel deficiencies at starting and during acceleration, and the Zarlatti System and the Cristiani System (both in Italy), wherein compressed air and compressed steam are used in separate cylinders as a steam locomotive and so supplement the Diesel prime mover when necessary.

Electric transmission in the present state of development is, in the author's opinion, and for all except the smallest sizes, the only one we can now safely adopt. General opinion in Europe largely concurs in this. Its use simplifies the starting and removes the need of reversing arrangements on the Diesel prime mover, all

Diesel traction is a relatively new branch of engineering and the combination of high Diesel speeds and high unit pressures leads to new and to a large degree unforeseen results.

One of the definite facts that has been developed by recent practice is that the problem of vibration and critical speeds becomes of great importance. An accelerating and rotating mass—as, for instance, a Diesel motor which is being speeded up—passes through a series of critical speeds, at which points the value of the forces brought into play may be many times greater than normal. The critical speeds may be below the normal speed and therefore the unit must always pass through these on getting up to full speed. These values change as the apparatus attached to the main shaft is changed; and a Diesel may operate perfectly alone, and yet when connected, say, to a generator on the same shaft (as in Diesel-electric locomotives), may with faulty design develop undesirable and unpleasant vibrations.

The matter of vibration becomes of even more importance when Diesel rail cars are considered, for with



Diesel Unit Designed for American Railroad Service

reversing, of course, being executed in the most simple manner by changes to the motor leads. Electric transmission permits the Diesel motor to be run at its most efficient speed at all times; all train-speed control being taken care of by voltage variations on the generator, and where necessary by series-parallel and field-control arrangements on the motors. Electric generators and motors are standardized pieces of apparatus of high efficiency and great ruggedness. We know exactly what they can be counted on to do under any ordinary circumstances. Exact figures are not available, but from such studies as he has made, the author believes that ultimately very little difference in cost or weight will be found between electric and hydraulic methods for the larger types, although there may be cases where in smaller units mechanical gears will show a lower first cost and weight. These alternatives should of course be carefully studied in each case as it arises. For reasons given, however, it is felt that on the whole electric transmission is the best solution for all but the small sizes, and even in these it should be seriously considered because of the many other incidental and fundamental advantages which its use makes possible. The advantages of electric transmission are becoming more and more appreciated, and it would not be surprising to see it universally adopted in the next few years for all Diesel traction apparatus excepting the very small units.

faulty design the resulting noise and unpleasantness make the car unpopular with the public.

The Maintenance of Diesel Apparatus

The art is still too new for there to be much real information available as to cost of maintenance; also types vary so much that such information would in any event be of little value. This much can be said, however: Any of the well-known makes of Diesels, either in this country or in Europe, operate quite reliably. This is true of either 2-cycle or 4-cycle types or those with air or airless injection. Some wear and tear of course takes place. Exhaust valves are subject to high temperatures and pressures and need inspection periodically. About two weeks a year should be allowed for general overhaul.

In general, the compression in Diesel cylinders varies from 500 to 600 lb. in European practice, although in the United States the pressures are somewhat lower.

The chief problem in the operation of a Diesel motor from the point of view of fuel consumption is of course to insure that complete combustion takes place. With air-injection types this is taken care of in the most thorough manner by completely breaking up the oil by means of the high-pressure injection air.

In general, it may be safely said that today there is not much difference in fuel consumption between air-injection and solid-injection types, and a fuel consump-

tion of 0.4 lb. of fuel oil per b.hp.-hr. is obtainable under ordinary conditions with either type.

General Conclusions

The author believes that the next few years will show a marked increase in the number of Diesel applications to specific railroad problems, as, for instance, where bad water conditions obtain, and particularly to switching service, to branch lines, and to a lesser extent to heavy main-line and terminal services. With larger production and closer attention to design features, cost and weights will tend to reduce. At the same time it is fairly certain that capacities will increase, which, together with multiple-unit operation, will render possible handling of the heaviest freight and passenger trains.

The total capital expenditure to be made in "Dieselizing" a railroad will be less in certain instances than with any form of electrification; this expenditure may be made gradually, and, by being spread out over a number of years, the financial strain sometimes necessitated when a complete electrification is undertaken will be avoided.

Discussion

A large part of the discussion was devoted to the economic and operating phases of the Diesel locomotive as compared to the electric and steam locomotives. One of the speakers pointed out that the Diesel locomotive undoubtedly has a decided advantage over the electrification of lines on which the traffic is light and also on roads where initial capital is difficult to obtain or where extreme power concentration, such as is required by electrification, is not required. Comparing the Diesel unit with an all-electric unit of equal capacity, he said, it is entirely possible to secure much higher speeds with the higher accelerating tractive forces of an electric locomotive than with a Diesel locomotive.

Several speakers commented on the excellent results that were being obtained through laboratory research in the Diesel engine field. As a result of the extensive research that has been going on during the past few years, one of the speakers said, the design problems appear on the whole to be more easily solved than the economic ones.

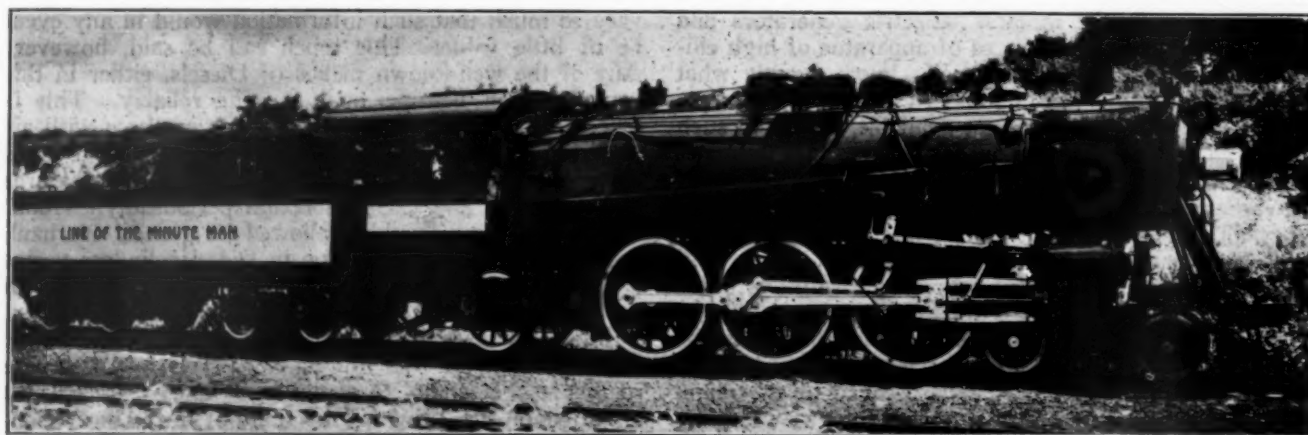
The maintenance of isolated engine houses with fuel, water and ash-handling facilities for one or two steam

locomotives is an expensive business when compared with the strategic location of a few Diesel locomotives which require only cleaning and inspection at infrequent intervals. Proper use of the latter, the speaker said, might permit discontinuing obsolete and inefficient maintenance points and the concentration of steam power in a relatively few modernized engine terminals. This also holds true in certain electrification zones where there are industrial tracks and yards in which traffic is insufficient to justify facilitating the distribution systems and where, at present, steam locomotives are kept in service. Here the improvements made possible in maintenance organization methods and facilities will in many cases justify the use of Diesel power for even relatively short daily mileages.

The discussion touched on the use of fuel oil of varying quality and the fact that the cost of fuel oil is one of the major items of expense in Diesel locomotive operation. One of the speakers brought out the fact that there was considerable difficulty in obtaining fuel oil of uniform quality, especially in the west. In reply Mr. Arthur stated that solid injection Diesel engines could use oil having quite a wide range in quality and there was no occasion for worry until the fuel oil used got down to real crude oil; which is down to perhaps 12 Baumes. A ship not knowing just what ports it will touch may have to pick up some of this very heavy crude oil for its Diesel engines, and for that reason air injection may be quite justified, yet solid injection is perfectly satisfactory even when there is a considerable range in the quality of the fuel oil.

Table of Principal Dimensions, Weights and Characteristics of the Diesel Locomotive Designed for American Railroad Service

Diameter of driving wheels.....	52 in.
Diameter of guiding wheels.....	36 in.
Rigid wheelbase	10 ft. 10 in.
Total wheelbase	50 ft. 6 in.
Overall length	61 ft. 8 in.
Output of Diesel motor, continuous.....	1,600 hp.
Output of Diesel motor, maximum.....	1,850 hp.
Weight of Diesel and electric equipment, including 9,000 lb. of fuel and 2,200 lb. of cooling water..	164,000 lb.
Weight of mechanical part.....	132,000 lb.
Total weight	296,000 lb.
Weight on drivers.....	220,000 lb.
Gear ratio	23:77
Tractive force at wheel rim, continuous.....	13,400 lb.
Corresponding locomotive speed.....	34.6 m.p.h.
Tractive force at wheel rim, 1 hr.....	17,800 lb.
Corresponding locomotive speed.....	26.0 m.p.h.
Tractive force at wheel rim, maximum.....	35,000 lb.
Maximum locomotive speed.....	56.0 m.p.h.



Colors Used on Two Boston & Maine Locomotives Which Haul "The Minute Man"

Front End, Smokebox, and Running Gear Are Black, with Polished Motion Work and Cylinder Head Casings; Boiler Jacket and Top of Tender Are Colonial Blue; Panels on Cab and Tender Are in Buff Outlined with Stripping in Red, with Which Edges of Running Boards Are Also Finished; Cab Is Dark Green; Headlight Casing Is of Super-Ascoloy Metal Which Will Not Tarnish—Locomotives Are Named the "Paul Revere" and the "William Dawes."

Hearing on St. Paul Reorganization

WASHINGTON, D. C.

THE question of the jurisdiction of the Interstate Commerce Commission to pass upon provisions in the plan for the reorganization of the Chicago, Milwaukee & St. Paul involving the relative treatment of different classes of security-holders after they have been passed upon by the courts was raised on July 11 at the hearing before Director Mahaffie of the commission's Bureau of Finance on the application of the Chicago, Milwaukee, St. Paul & Pacific for authority to acquire and operate the property of the old company and issue its securities as provided for in the reorganization plan.

An argument on this question was precipitated when Henry W. Anderson, of counsel for the Jameson bondholders' defense committee, asked W. W. Colpitts, of Coverdale & Colpitts, on cross-examination, on what theory he justified the proposals to give the stockholders 5 per cent bonds for the amount of \$4 a share less than their assessments, while the general and refunding bondholders are to receive 80 per cent in income bonds and 20 per cent in the 5 per cent bonds. Robert T. Swaine, of counsel for the applicant company, objected to the question, saying it was not a proper one for the witness and also that it covered an issue already settled by the courts.

Mr. Anderson seized upon the issue and made a brief argument to the effect that whatever the courts may decide does not take from the commission its obligation to determine whether the terms of the plan are just and reasonable. Mr. Swaine replied that the relative treatment of different classes of securities presents a question of private rights which is *res judicata* and that the commission's function is to pass upon the acquisition of the property and the issuance of the securities from the standpoint of the public interest. Director Mahaffie finally ruled that the question should be answered but it is expected that the question will become an important issue before the case is decided, as the Jameson committee, through its counsel, has objected to the incorporation in the present record of the record of the proceedings on which the court approved the reorganization plan and has conducted its cross-examination of the applicant's witnesses in the form of an attack upon the plan. At one point Mr. Anderson said he was trying to show that the "whole plan ought to be scrapped."

Jerome J. Hanauer Testifies

An outline of the events leading up to the receivership in March, 1925, and an explanation of reasons for various provisions of the reorganization plan was given on July 12 at the hearing by Jerome J. Hanauer, of Kuhn, Loeb & Co., one of the reorganization managers.

Much of Mr. Hanauer's testimony was in answer to criticisms of the plan made by the Jameson committee. He denied that the plan had been formulated in the interest of the bondholders as against the interests of the stockholders or that there is any unfair treatment involved in giving to the holders of Puget Sound bonds the same kind of security that is to be given to the holders of refunding mortgage bonds of the old company. He said that the Jameson committee, which now takes the position that the stockholders ought to be assessed a greater amount, formerly objected to the amount of assessment proposed as being excessive, at a time when the Jameson committee represented some of the stockholders. In reply to the criticism that the stock-

holders are to receive fixed interest bonds for their assessment, while the junior bondholders are to receive 80 per cent in contingent interest bonds, and only 20 per cent in fixed interest bonds, Mr. Hanauer said that it is very unusual in railroad reorganizations to give the stockholders for new money paid in as assessments less than the amount of new money in security, and that it is very usual to give the stockholders for their new money a security which ranks prior to that given the old bondholders.

When Mr. Swaine asked Mr. Hanauer if he was of the opinion that the assessment represents all the burden the stockholders could stand, he said it was a question at one time as to whether it was not more than the common stockholders could stand and that after the plan was promulgated, in June, 1925, the criticism of it was almost entirely against the treatment of the stockholders.

As late as June, 1926, Mr. Hanauer said, the Jameson committee objected to the assessment of the stockholders proposed as being too high. He said the principal modification of the plan as promulgated in 1925 was in the provision for giving 20 per cent in 5 per cent bonds with 80 per cent of income bonds, instead of 100 per cent of income bonds, and that this was adopted because the savings banks wanted a part of their holdings to be in fixed interest bonds.

After the federal control period in 1920, he said, the firm began to feel disturbed regarding the situation of the St. Paul and some other railroads and the company had come to it for small loans. After the railroad had made an estimate that with an additional loan it would be able to "get through 1924" an issue of \$14,000,000 of 6 per cent bonds was sold which was expected to meet the requirements but in the latter part of 1924 it became apparent that the earnings would be less than estimated and a special committee of the board of directors was appointed to consider the situation upon the maturity of \$48,000,000 of 4 per cent bonds on June 1, 1925. Approximately \$11,000,000 of the bonds were held in France, Mr. Hanauer said, and he went to Paris and saw the committee representing them to discuss the possibility of an extension of the bonds. The committee indicated a willingness for an extension if assured that the company could continue to pay interest and the principal when due but on condition that the interest be increased to 7 per cent and that 10 per cent be paid off in cash. Mr. Hanauer said he also knew from experience that it might be necessary to pay another 10 per cent to those unwilling to extend.

One of the principal questions put to Coverdale & Colpitts to answer was as to whether the company could be successfully operated and its solvency maintained if the French loan were extended at various rates of interest and under various conditions for part payment in cash and early in March he learned, through President H. E. Byram of the railroad, Mr. Hanauer said, that the answer to the question was to be negative, although it was not understood that this meant an immediate receivership.

"We felt that we had from March 1 to June 1 in which possibly to work out a voluntary readjustment," Mr. Hanauer said, "as we had done such things before in smaller cases, but in a few days we were surprised and disturbed to learn from our counsel that the board of directors of the railroad had been advised by their counsel that if they knew they could not pay on June 1 the principal and interest of the bonds coming due the directors had no right to pay interest due in April on other bonds issued under the same mortgage. We were told this by our own counsel. We were not consulted. While Mr. Colpitts was on his inspection trip consider-

ation had been given to a plan for giving stock in place of the bond coupons for several years but we were advised that preferred stock could not be issued for that purpose under the Wisconsin laws."

The inability to pay the April 1 interest, Mr. Hanauer said, meant an immediate receivership and the first notice of the condition was sent to the security holders at that time.

Taking up the subject of the reorganization plan, Mr. Hanauer told of the formation of a committee representing all classes of bondholders and said that E. C. Jameson, of the Globe & Rutgers Insurance Company had been invited to become a member, as the company had been owners of a small amount of bonds and ten or eleven thousand shares of stock, but Mr. Jameson declined. Mr. Hanauer said that the committee held a meeting but did not ask for a deposit of bonds at once, and that shortly afterward Mr. Jameson had called on him and suggested a plan by which the company should buy up the outstanding bonds at the low prices at which they were selling, about 60, and thus cancel a large part of its capitalization. "Such a suggestion was perfectly absurd," said Mr. Hanauer. "When I asked him where the company could get the money with which to buy the bonds he said it could easily borrow from the banks at 6 per cent and I asked how that would make it any better off if it could be done."

Mr. Hanauer said he devoted most of his time to the reorganization plan until it was promulgated in June, consulting with F. H. Ecker, of the Metropolitan Life Insurance Company, chairman of the bondholders' committee, and other members. After it was promulgated, he said, he discussed it with Mr. Jameson who objected to the assessment as excessive and proposed a plan to double the amount of the common stock and sell to a syndicate at \$10.

Consideration was given for a time, the witnesses said, as to whether the company could afford to give up the Puget Sound line, and whether it could be sold to the Minneapolis & St. Louis or the Chicago & North Western, but after discussion of the future of the line and its value to the system the conclusion was reached that it could not be cut off and it was decided that the Puget Sound bonds should be given the same treatment as the refunding bonds of the St. Paul.

Mr. Hanauer also outlined the efforts made to obtain legislation providing for a refunding of railroad indebtedness to the government for 30 years at a lower rate of interest than 6 per cent. He also described negotiations with the Secretary of the Treasury, A. W. Mellon, and the Director-General of Railroads, James C. Davis, regarding the adjustment of the St. Paul's indebtedness to the government, \$35,000,000 on loans approved by the Interstate Commerce Commission and \$20,000,000 on a note to the Railroad Administration. Mr. Mellon was willing to accept a plan for the payment of \$52,000,000 in cash and the balance in preferred stock, he said, but Director-General Davis objected to taking the stock as part of the payment on his note. Such a provision was inserted in the plan, however, and after Secretary Mellon became Director-General of Railroads he accepted the offer as made in the plan.

Mr. Hanauer said that he had testified a year ago that he hoped no underwriting plan would be necessary and that he still believed that no underwriting commission would have to be paid in connection with this reorganization. He filed for the record a number of statements and exhibits in reply to questions in a letter from Director Mahaffie dated June 4.

Mr. Anderson conducted an argumentative cross-examination of Mr. Hanauer, bringing out that the representatives of the government had not taken the position

that the \$55,000,000 of indebtedness of the railroad to the government should have priority over claims of the bondholders. He then asked if Mr. Hanauer thought that the stockholders, whose assessments are to be used largely for the purpose of paying \$52,000,000 in cash on the debt to the government,—"a debt of that kind"—are entitled to rights ahead of stockholders who purchased bonds on the security of a lien. Mr. Hanauer replied that he thought it a very sound agreement.

The presentation of the case of the applicant was brought to a close on July 13 and an adjournment was taken to July 19 when Mr. Anderson said he might have to call some witnesses. He said he was having some statements prepared from the commission's records and that he might desire to have called the chairman of the bondholders' committee and some of the receivers. He also said that an effort was being made to reach an agreement with counsel for the applicant as to parts of the record of the commission's investigation which might be stipulated into the record. Director Mahaffie asked Mr. Swaine if he desired any action on the three motions made at the opening of the hearing on July 6 for an appeal to the commission from Mr. Mahaffie's rulings that the records of the investigation hearings, those before the Senate committee and the court proceedings might not be incorporated in the record without a stipulation. Mr. Swaine said that would depend on whether an agreement could be reached as to the parts to be included and he hoped an agreement would obviate the need for action on the motions.

Mr. Anderson moved to have struck from the record some statements which he said had been included with the applicant's reply to a question from Mr. Mahaffie as to the services performed and to be performed by the reorganization managers. He said that statements from the former record had been included with this which constituted "unfair attacks, some of them scurrilous" against the Jameson committee. When Director Mahaffie asked Mr. Swaine if he desired to withdraw any of the statements he said he did not but would be glad to file a memorandum on the motion. Director Mahaffie took the question under consideration.

The case for the applicant is largely included in 77 exhibits filed during the hearing, although some of them represent information called for by Mr. Anderson on cross-examination.

P. & L. E. Train Stop Approved

WASHINGTON, D. C.

DIVISION 1 of the Interstate Commerce Commission has approved the installation of the automatic train-stop system of the Union Switch & Signal Company on the Pittsburgh & Lake Erie division of the Pittsburgh & Lake Erie between Pittsburgh, Pa., and Youngstown, Ohio, 64.9 miles, as meeting the requirements of the commission's specifications and order. The line includes 52.4 miles of four track, 11.5 miles of double track and 1 mile of three-track road. A list of 11 requirements as to maintenance, tests, inspection, etc., is included in the report.

The cost of this installation, as reported by the carrier, covering wayside and locomotive equipment, was as follows:

ROADWAY EQUIPMENT:	
Total cost of roadway equipment of train control installation, less power lines and power apparatus, if any, and less cost of signals or cost of change in existing signal system; less salvage	\$110,206.48
Total cost of power lines and power apparatus, if any, less salvage	None
Total cost of signal system installed in connection with train control; less salvage	None

Total cost of changes in existing signal system made necessary by train control; less salvage.....	None
Total all other roadway equipment costs, if any.....	None
Total cost of roadway installation.....	\$110,206.48
LOCOMOTIVE EQUIPMENT:	
Total cost of locomotive equipment installed (116 locomotives)	142,082.60
Total cost of installation.....	\$252,289.08

The three-speed continuous inductive system was installed on this road for 20 miles in January, 1925, but subsequently this was taken out of service, it having been decided to provide uniformity with the practice on other lines in the New York Central system; and the intermittent inductive train stop was adopted, with forestalling feature. The complete installation was placed in service on July 15, 1926, and the final test by the government was completed April 27, 1927. The termini of the automatic train control are at DX tower, Pittsburgh and N. Y. C. Junction at Youngstown.

In addition to the 116 locomotives used on this division, seven locomotives of the Erie are operated over a section of the line; and the New York Central also operates over P. & L. E. territory certain locomotives equipped with the G. R. S. intermittent inductive train stop. The G. R. S. apparatus on the New York Central locomotives is operated in connection with the track elements of the Union system so that for operation on this road the two systems are interchangeable.

The 11 requirements appended to the report include the following:

The maintenance of constant voltage requires further attention.

Relays should not be adjusted to compensate irregularity in locomotive circuits except after the circuit values are found to be otherwise correct; relays should be kept sealed.

Portable test sets require further careful study to see that their values are correct.

Certain bells of low resistance should be replaced by those of higher resistance.

The schedule of braking distances should be carefully rechecked.

Great Northern Pacific Plan

WASHINGTON, D. C.

APPPLICATIONS were filed with the Interstate Commerce Commission on July 8 by the Great Northern Pacific, and by the Great Northern and the Northern Pacific for authority for the unification of control of the two Northern companies by exchange of the stock of the new company for theirs on a share for share basis and by lease for 99 years of the properties of the Great Northern and Northern Pacific and of the Spokane, Portland & Seattle, for operation by the new company.

This would bring under the control of the Great Northern Pacific company approximately 27,300 miles of railroad, having an aggregate capitalization as of December 31, 1926, of \$1,663,825,404, although the application does not propose to include in the lease or under the direct operation of the now company the 11,400 miles of the system owned and controlled by the Chicago, Burlington & Quincy, of which 97 per cent of the capital stock is owned jointly by the two Northern companies. The properties to be directly operated are the 8,164 miles of the Great Northern, 6,668 miles of the Northern Pacific, and 554 miles of the S. P. & S. The latter controls about 900 miles of line and the stocks of its subsidiaries, but not their properties, are to be included in the lease.

No new capital expenditure is involved. The Great

Northern Pacific is to have an authorized capital stock of 5,000,000 shares of common stock without par value, of which it asks authority to issue 4,970,976 shares, 2,490,981 in exchange for the stock of the Great Northern and 2,479,995 for that of the Northern Pacific. It also asks authority to assume liability in respect of the securities of the three companies to the extent that such assumption is involved in the leases.

After referring to the community of interest existing for more than 26 years through the ownership of control of the Burlington and for more than 20 years through ownership of all the stock and mortgage bonds of the S. P. & S. the application gives reasons to show that the acquisition of control will be in the public interest in part as follows:

Advantages Claimed for Plan

The tentative valuations fixed by the commission for the carrier properties owned or controlled by the Burlington company and the Spokane company are more than 40 per cent. of the total tentative valuations fixed by the commission for all the carrier properties (including those of the Burlington company and the Spokane company and their subsidiaries) owned or controlled by the Northern companies. Of the total revenue ton-miles moving over all of said carrier properties during the years 1925 and 1926, approximately 49 per cent thereof moved over the lines in which the Northern companies already have this practically complete community of interest, i. e., the lines owned and controlled by the Burlington company and Spokane company and their subsidiaries.

In view of the long existence of these communities of interest (the termination of which would be both impracticable and disadvantageous to the public), the applicants believe it is a natural and proper evolution and highly in the public interest to take the further steps, authority for which is here sought, whereby the control of the Northern companies can be unified in the manner here proposed, thus bringing about a more complete and general unification of interest. Moreover, there has developed the condition that Northern Pacific and Great Northern are at present largely held in common ownership. On December 31, 1926, 13,593 persons were stockholders of both companies and owned \$155,973,300 par value of Northern Pacific stock and \$147,235,400 par value of Great Northern stock. Thus the same persons who owned approximately 63 per cent of Northern Pacific Railway Company also owned approximately 59 per cent of Great Northern Railway Company, and approximately 61 per cent of the total capital stock of both companies was held by the same stockholders.

The unification here proposed will admit of combined control and operation of the lines of the Northern companies and of the Spokane Company and will result in improved service at greatly reduced operating and capital costs. It will make possible the use of routes with shorter distances, easier grades, more available fuel, greater density of traffic and other factors making for the movement of traffic in shorter time and in larger train loads, or for economies in other ways. It will thereby make it possible to produce the same amount of transportation more promptly and efficiently and with less locomotives, cars and fuel, and less wear on track, and to meet the needs of expanding business with less enlargement of labor forces, and less additional investment for equipment, tracks and other facilities.

The new company will be able to obtain capital upon more favorable terms because of the increase in its net railway operating income resulting from the economies described; because its total capital requirements will be smaller due to more efficient use of existing facilities as above set forth; and because its operating revenues, through greater traffic diversity and wider tributary territory, will be less subject to fluctuation than the operating revenues of either of the Northern companies alone.

Development policies with respect to the properties of the Burlington company and of the Spokane company respectively can be more decisively established and promoted under the proposed unification.

In order to enable the roads serving the Northwestern rate region to continue adequately to serve the public, net earnings must be substantially increased and brought more nearly to a parity with the earnings of roads serving other sections of the country. In every region established by this commission for classification purposes with the exception of the Northwestern region, net earnings for the roads as a whole have shown an increase and in most cases a large increase over the earnings of the so-called test period, the three years preceding the war. The Northwestern region is thus the only region in which net earnings have not increased; on the other hand net earnings in this region have shown a substantial decrease, notwithstanding

a large increase in investment. In some of the regions, notably in the two remaining regions of the Western district and in the Southern district, the increase has been due more largely to increases in tonnage than to increases in rates. In the Eastern district, the increase has been due more largely to increases in rates for the increases in tonnage have been relatively small. In the Northwestern region there has been no increase in tonnage corresponding to that in the balance of the western territory and in the south; nor has there been an increase in rates corresponding to that in the Eastern district. As there is no assurance of relief in the immediate future either through an increase in tonnage or an increase in rates sufficient to put the earnings of the roads in the Northwestern region on a parity with the earnings of roads of other sections of the country, there is a special necessity for adopting all methods which will tend to reduce operating costs and thus increase net earnings without the impairment of service. Because of these conditions, like other roads in the region, the Northern companies are in great need of increased net earnings to maintain their credit which they must do to continue adequate public service. The unification is clearly in the public interest as a first step in improving the railroad situation in the Northwestern rate region.

The industrial and commercial rivalry between the northwestern territory on the one hand and the middle and southwestern transcontinental territories and the producing sections of the South is very keen. The three sections last mentioned are now served by highly prosperous and efficient railway systems which have strengthened and are still strengthening their respective positions by the acquisition, in many instances with the approval of the commission since the passage of the transportation act, of connecting and feeder lines and by the making with like approval of highly important and significant traffic and operating alliances. It is of vital importance to the commercial development of the Northwest that it also be served by a system comparable in its command of traffic and in its financial strength with those operating in the other regions referred to, as otherwise it is destined to fall behind in the race for commercial supremacy.

Effect on Competition

The lines of the two Northern companies, although their main lines are geographically parallel, are complementary to each other. To a greatly preponderating extent the lines of the two Northern companies serve distinct local territories, the Great Northern serving primarily the northern portion of the northern tier of states west of Minnesota and the Northern Pacific serving primarily the southern portion thereof, while only the Great Northern company has mileage in South Dakota or Iowa or in the southern part of Minnesota. As a result, the actual competition between the lines of these two companies is relatively small, except at important terminals which enjoy and will continue to enjoy ample competitive service from other lines and routes already available.

There is effective competition with other lines at all the termini of the Northern companies, both east and west, and at all points common to the two Northern companies' lines, with only a very few exceptions. These lines include the Chicago, Milwaukee & St. Paul, the great Canadian systems and the powerful Union Pacific system. Less than 6 per cent of the total population of all competitive communities on lines of the two Northern Companies is served solely by these two companies, and less than 2 per cent of the total tonnage of the two Northern companies is exclusively competitive between these two companies. Operation of the properties of the Northern companies under unified control in competition with the other systems referred to would result in the establishment of standards of service and of rates which would inure to the benefit of all points on the lines of the unified system, competitive or non-competitive.

There is no substantial competition between either of the Northern companies and the Burlington company, but the lines of the Burlington company and the lines of each of the Northern companies are complementary and interdependent. These conditions will not be affected by the granting of this application, except that the complementary character of the lines of the Northern companies and of the lines of the Burlington company will be rendered even more effective in the public interest.

The proposed unification will open new routes and channels of trade and commerce of decided importance to the public, because it will give shippers on the lines of each of the Northern companies full access to the local territory along the lines of the other, and will give shippers located on the separate terminals of either Northern company all the benefits of convenience and expedition of location on the terminals of both.

On account of the long standing interest of each of the Northern companies in the Burlington company and the Spokane company respectively, each of the Northern companies has for

many years treated the Burlington company and the Spokane company as preferred connections and in doing so has established routes and channels of trade and commerce of the greatest importance to the public. Thereby regions served by the Burlington company and the Spokane company respectively have been given access to all the territory served by each of the Northern companies, and the regions served by each of the Northern companies have been given access to all the territory served by the Burlington company and the Spokane company respectively. This highly favorable situation will be fully preserved by the proposed unification and in addition these routes and channels will be definitely improved in the public interest through unified instead of dual direction of the Burlington company and the Spokane company.

An important factor bearing upon the public interest in effectuating the proposed unification is that any alternative unification which would require a disruption of the existing communities of interest between the Northern companies would result in serious public injury. Throughout the period of over 26 years during which the two Northern companies have owned a very large majority of the stock of the Burlington company, the system of the Burlington company has been developed by new construction and otherwise so as to promote, and in contemplation of, interchange of traffic both passenger and freight with each of the Northern companies. To this end, for example, the Burlington company has expended over \$23,600,000 in construction or acquisition of additional connections with the lines of the Northern companies and has acquired control of, and included in its system, the lines owned or controlled by the Colorado & Southern. The Northern companies have enlarged their terminals and other facilities with a view to enjoying the interchange of traffic with the Burlington company, and the Great Northern company has built two lines of 297 miles in the aggregate at a total cost of \$17,151,665 to connect with the Burlington at Billings, Montana, and at Sioux City, Iowa. The growth over many years of an extensive interchange of traffic as a result of these developments and of the control of the stock of the Burlington by the Northern companies, has produced substantial dependence by the Burlington upon traffic received from and delivered to both the Northern companies, and in the same way each of the Northern companies has a substantial dependence upon the traffic interchanged with the Burlington company.

Neither of the Northern companies could make any disposition of its stock in the Burlington company on satisfactory terms because the consequent disassociation from the Burlington company of the Northern company making any such disposition would terminate the present close relations and business interchange between such Northern company and the Burlington company and thereby impair to a very substantial but unpredictable extent the earning capacity of the Burlington company as well as of such Northern company. Any disassociation of the Burlington company from either of the Northern companies would be accompanied by an impairment of earning capacity on the part of the Burlington company which could not be replaced by any company purchasing the stock, and there would also be a substantial impairment of earning capacity on the part of the Northern company disposing of its stock in the Burlington company.

Similar considerations apply to any suggestion of the disassociation from the Northern companies of the properties of the Spokane company. The promotion and construction of the lines of the Spokane company were undertaken by both Northern companies as a joint venture, and those lines constitute important connections and feeders for both of the Northern companies.

Law Changed Since Northern Securities Decision

The lines of the Northern companies were held in *United States v. Northern Securities Co. et al.*, 120 Fed. 721 (1903); same case on appeal, *Northern Securities Company v. United States*, 193 U. S. 197 (1904), to be competing lines in the sense that their combination through common stock ownership was held to be prohibited by the Sherman anti-trust act. The lines of the Northern companies were also held to be parallel or competitive in *Pearsall v. Great Northern Ry. Co.*, 73 Fed. 933 (1895); same case on appeal, *Pearsall v. Great Northern Railway Company*, 161 U. S. 646 (1896), within the meaning of the Minnesota statutes of March 9, 1874, and March 3, 1881, prohibiting any combination of parallel or competing lines.

All of the decisions above referred to involved facts existing, and were rendered, prior to the passage of the transportation act, 1920, and particularly paragraph (8) of Section 5 of the interstate commerce act as amended by said transportation act.

There have been no other decisions either of the courts or of regulatory bodies, holding any of the lines involved in this application to be competing lines.

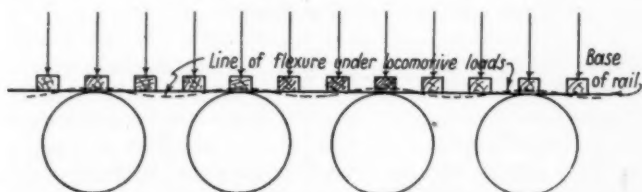
Stress in Rails Has Important Bearing on Failures

Records kept by P. & L. E. show that breakages vary with the relation of wheel loads to stiffness of sections

AN interesting and informative study of rail failures has been made by the Pittsburgh & Lake Erie which indicates clearly that there is an intimate relation between the strength and stiffness of the track structure and the loads imposed upon it. The essence of this study, which extends back to about 1915, is illustrated in the chart which shows the relation that has existed on that road between the weight of the track rail and that of the rolling stock, and, also, the relation of these two factors to rail failures.

History of the Rail Failures

From 1910 to 1916 the track on the Pittsburgh & Lake Erie included several sections of rail, the heaviest



In Reality the Rail Is a Continuous Beam Supporting the Reactions of the Roadbed

of which was the 100-lb. A. R. A.-B. section which was standard for main line tracks. During the same period the heaviest power used on the road was the consolidation or 2-8-0 type with axle loads of about 42,500 lb. With this track and motive power, the number of rail failures ranged from about 170 to 220 yearly until 1915, when, owing to the gradual decrease in the mileage of light rail, the number of failures dropped to about 85. With the continued increase in the amount of 100-lb. A. R. A.-B. rail in service to about 72,000 tons, or 100 per cent of the total in main tracks, and with little change in the rolling stock, the number of rail failures declined still further until 1918, when its minimum was about 65.

Apparently, within this latter period from 1915 to 1918, a relation existed between the weight of the rail in the track and the weight of the rolling stock which was conducive to the development of few rail failures, for when this relation was altered materially during the next three years by the rapid increase in the weight of cars and power, while the track structure remained about the same, the number of failures increased rapidly. In analyzing this situation it is noted that during 1916 the Pittsburgh & Lake Erie began to introduce locomotives of the Mikado 2-8-2 type with axle loads ranging from 60,000 to 75,-

000 lb., and almost concurrently began to purchase cars of 70-ton capacity with loaded axle loads of about 51,000 lb. until 1918, when there were only about 35 of the heavier locomotives and about 2,000 of the larger cars in service, their effect upon the rail was not appreciable, but when in 1919 the number of these locomotives had increased to 65 and the number of 70-ton cars to 2,500, the number of rail failures immediately increased from the earlier minimum of 65 to about 200. Even more striking was the increase in the rail failures which occurred during the following year under practically the same conditions of track and loads, when the number mounted to about 700.

Analyzing Failures Leads to More Rigid Rail

Apparently the 100-lb. A. R. A. rail with its relatively thick head and shallow web was not capable of carrying the increased loads, so in 1921 the Pittsburgh & Lake Erie began to replace this rail with the 115-lb. Dudley section rail, in which an attempt was made to secure increased strength, but more particularly a large increase in girder strength and stiffness. These characteristics were found in the new section, where a reapportionment of the metal gave the rail a relatively smaller head and base but a considerably greater over-all depth and fishing distance. The effectiveness of the new section in affording increased rigidity is evidenced by the fact that with only 15 per cent more metal it provides approximately 50 per cent greater stiffness.

The reason for desiring rail of greater stiffness is apparent from a study of the action of rail under moving loads, in which it can be assumed to approximate a continuous beam

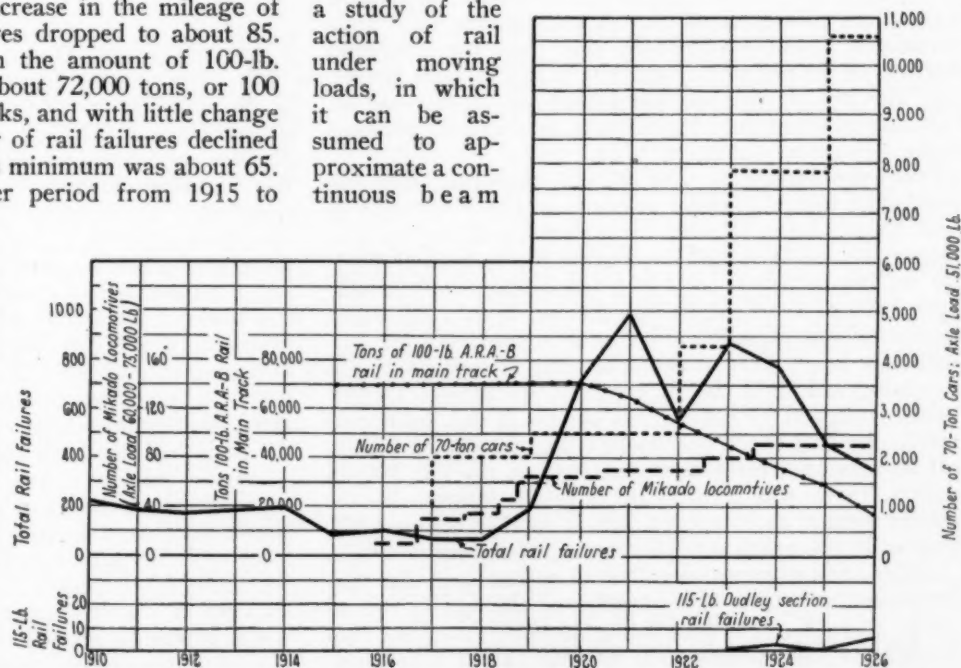


Chart Showing the Relation of Rail and Axle Loads to Rail Failures on the Main Tracks of the P. & L. E.

with continually varying points of support and so subject to a continual reversal of stresses. This situation is shown in the sketch where the ordinary relation of the locomotive drivers to the rails has been reversed to indicate more clearly the actual conditions that exist with respect to loads and reactions on the rail. Here the locomotive drivers, with 60-in. spacing, are shown to support the varying reactions of the roadbed, the dotted line indicating the continuous girder effect of true line of flexure which obtains in the rail. To reduce this wave motion in the rail and the constant reversal of stresses set up by it, and furthermore, to minimize the flexibility of the rails at joints which had been causing the destruction of both the rail ends and the splice bars in spite of a high standard of maintenance, the high Dudley section with correspondingly high rigid splice bars was adopted.

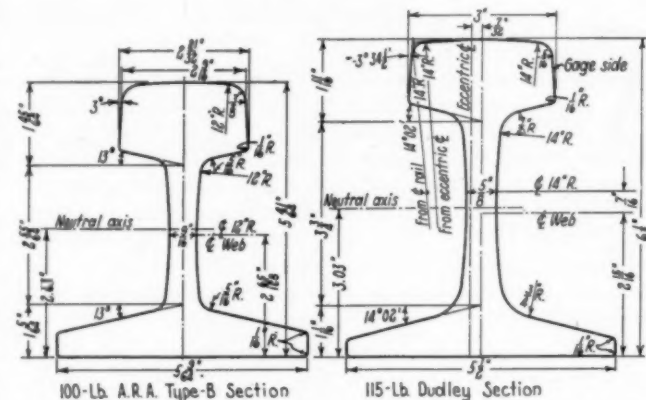
Going back to the original chart and the serious situation that existed with regard to rail failures in 1920, it is seen that with the release of about 7,000 tons of the old 100-lb. rails during 1921, there was an appreciable decrease in the increased number of rail failures during that year, in spite of the fact that the total number of failures reached the unprecedented peak of about 980. During the following year, with the release of about 10,000 additional tons of the old rail and with little change in loadings, there was a rapid decrease in the number of failures, the total number being only 550, or 430 less than in the preceding year. In 1923, the addition of about 1,750 of the 70-ton cars and the gradual increase in the number of Mikado locomotives in operation, which had now reached a total of 80, again disturbed the trend in rail failures and in spite of the further removal of 9,000 tons of the 100-lb. rail in service, the number of rail failures increased to 860.

Since 1923, a more favorable situation has obtained with regard to the number of failures which have occurred yearly, there having been 770 in 1924, 450 in 1925, and a further decrease to 350 in 1926. These marked reductions in the number of rail failures have occurred although the number of 70-ton cars in service increased to 10,600 in 1926, and the number of Mikado locomotives to a total of 91. Accompanying this large increase in loadings, however, has been the continual decrease in the amount of old 100-lb rail in main tracks, until the rail of this section remaining at the end of 1926 amounted to only 16,000 tons, or about 22 per cent of the amount in service in 1920.

From the foregoing it is evident, therefore, that the solution of the rail failure problem on the Pittsburgh & Lake Erie is being effected through the building up of a track structure such that its relation to the heavier loading will more nearly approach the situation prevailing from 1915 to 1918, which was conducive to a minimum number of rail failures. That such a condition will undoubtedly be realized within the next few years as the remaining old light rail is replaced by 115-lb. Dudley rail is evidenced by the fact, as shown in the chart, that during the past three years when the amount of 115-lb. rail in service greatly exceeded that of the old 100-lb. section, there was a total of only 11 failures in the heavier section as compared with a total of about 1,570 failures in the much smaller amount of the lighter rails.

While the reduction in rail failures has been the particular end sought in the adoption of the 115-lb rail on the P. & L. E., it is interesting to note the effect that the heavier rail section with its more rigid splice bars has had on joint maintenance. With the 100-lb. rail and its shallow 26-in. heat-treated bars, the flexibility of the joints under moving wheel loads was so great that the horizontal component of the vertical stresses caused sufficient abrasive action between the bars and the rail

heads and flanges to wear them down, permitting the bars to come in contact with the webs of the rails within about three years. When this condition had been reached it was found that regardless of the use of joint springs or nutlocks, and continual maintenance, it was impossible to keep the joints tight. On the other hand, with the high 115-lb. rail, which has about 50 per cent



Details of the 100-Lb. A. R. A. Type B Section and the 115-Lb. Dudley Section

greater stiffness, and with 38-in. corresponding stiff, heat-treated splice bars in use, it has been found that the wave motion at the joints, and the horizontal component thereof, have been so reduced that it is possible to maintain tight joints with less maintenance and without the use of spring washers of any kind.

This study of the rail failure situation on the Pittsburgh & Lake Erie has been carried out under the direct supervision of A. R. Raymer, assistant vice-president and chief engineer of that road, to whom we are indebted for the information presented above.

The New B. & O. Stock Issue

WASHINGTON, D. C.

A DETAILED explanation of the Baltimore & Ohio's new financing through an issue of \$63,242,500 of additional capital stock, offered to shareholders at \$107.50, was furnished by George M. Shriver, vice-president of the company, at a hearing on July 8 before Examiner C. E. Boles of the Interstate Commerce Commission. The application was opposed by Lloyd Church, of New York, who had filed an intervening petition objecting to the arrangement for paying a commission of \$2.25 per share, or \$1,422,956, to the bankers for underwriting the issue, and to the retirement of \$35,000,000 of ten-year 6 per cent bonds at a premium of 2½ per cent with the proceeds of the issue. He contended that an issue of \$30,000,000 of stock would have been sufficient and objected because the issue had not been approved by stockholders.

At the hearing it was brought out that Mr. Church represented 35 shares of stock held by a client, and 500 shares purchased by him after the announcement of the issue and transferred to him on June 15, the day before the filing of the application with the commission. He declined to say just when he bought the stock but said it was before he learned of the underwriting commission. No other opposition appeared but Mr. Church insisted on having ten days in which to file a brief. The examiner finally ruled that the brief must be filed by July 15 although counsel for the railroad and for the bankers insisted that this would allow too short an interval for a decision that would enable the rights to subscribe to the

stock to be exercised by July 21, the date set. Mr. Boles said, however, that he did not think the commission would require very long to dispose of the case, Robert T. Swaine, representing the bankers, said the commission might well dispose of the case on the precedents it had recently set in other cases involving underwriting commissions.

Mr. Shriver in his statement answered in detail the objections made by Mr. Church and on cross-examination said that the directors and officers of the company had given consideration to various prices at which the stock might be issued and had decided on the price fixed as one to meet approval of the commission.

Mr. Shriver said that the president and directors had approved an agreement with Kuhn, Loeb & Co. and Speyer & Co. later joined by the National City Company for an underwriting under which the bankers agreed to take any of the stock not subscribed for by the holders of the preferred and common shares at the same price and on the same terms as are offered to such stockholders.

As compensation for their undertaking the company agrees to pay \$2.25 per share for all of stock so to be offered to the stockholders, or a total of \$1,422,956.25. If for any cause beyond its control the company should not, on or before July 26, 1927, be in position to deliver stock certificates or receipts calling for delivery of such shares as shall not have been subscribed for by the holders of the preferred and common stock the bankers may at their option withdraw from the obligation under the agreement, and in that event the underwriting compensation is to be reduced to \$1 per share for all the shares of common stock to be underwritten or \$632,425.

The budget of the company covering necessary additions and betterments calls for expenditures of approximately \$1,350,000 per month, and as the treasury balance, which at January 1, 1927, was about \$21,800,000 had been depleted by expenditures for these and other corporate purposes, consideration was given to means of reimbursing the treasury and providing funds for further imminent expenditures. He continued:

The management and directors have looked forward to the meeting of the financial requirements of the company through the issue and sale of stock, rather than through a further increase in the fixed obligations, and with the continuing ease in the money market, and consequent greater demand for securities for investment, consideration was given to the sale of stock, first, in an amount sufficient to reimburse the treasury and to meet the immediate financial requirements, and second, to anticipate the \$35,000,000 10-year 6 per cent gold bonds maturing on July 1, 1929. These bonds, which bear interest at the rate of 6 per cent, were sold on July 1, 1919, at 93½, or a discount of \$2,275,000, making the cost to the company 6.91 per cent.

The general financial conditions at the time this loan was made were such as to render necessary the pledge of an unusual amount of securities to remain on deposit during the life of the loan. Owing to the situation created by the World War the company had found it necessary, first, to reduce, and then in 1919 to suspend dividend payments upon its common stock, and in order to strengthen its credit position, and as a factor in securing the financial accommodation through the \$35,000,000 bond issue above referred to, the company agreed to set aside out of its net income not less than \$3,500,000 per annum over a period of 5 years or until the money so set aside should equal \$17,500,000, to be applied solely for capital expenditures made after June 30, 1919, or to pay maturing funded obligations, and with the condition that no dividends were to be declared or paid upon the capital stock of the company unless the net income should be in excess of all matured instalments to the said fund for capital expenditures. The indenture further provided that whenever the money so set aside and applied to capital purposes should aggregate \$17,500,000 the obligation of the company to set aside monies in this connection would cease. The company was enabled to meet this requirement in full within four instead of five years and dividends were resumed in September, 1923, first at 5 per cent, and for the year 1926 and thereafter at the rate of 6 per cent per annum.

The funded debt, other than equipment trusts, maturing in 1925 was roundly \$132,000,000. These maturities were, in part,

anticipated or provided for through refinancing in 1924 or early in 1925. The company was fortunate in being able to accomplish this large amount of refinancing upon favorable terms during a period of comparatively easy money. While this refinancing was accomplished on what was generally considered a satisfactory basis, an even better interest rate could no doubt have been secured had the capital stock of the company—or owner representation—constituted a larger proportion of its total capital investment. With the retirement of the \$35,000,000 of secured indebtedness and the provision of additional funds to be realized through the sale of \$63,242,500 common stock the relative position of the company with respect to proportion of bonds outstanding to capital stock will be greatly improved. Using the capitalization as of June 1, 1927, as a base the new relationship would be as follows:

	Before new financing		After new financing
Mortgage debt outstanding....	\$580,461,541	—\$35,800,000	\$544,661,541
Per cent of total.....	73.36		66.52
Capital stock outstanding....	\$210,808,534	+\$63,242,500	\$274,051,034
Per cent of total.....	26.64		33.48
Total June 1, 1927.....	\$791,270,075		\$818,712,575

In other words, instead of a proportion of one of stock to three of bonds the proportion becomes one of stock to two of bonds, an improved relationship which should be reflected on a broader market for the company's securities and cheaper financing of the company's monetary requirements in the future.

This was an important consideration moving the directors to issue at this time stock in the amount above stated.

Book and Market Value of Stock

At December 31, 1926, the total par value of capital stock outstanding in the hands of the public was—

Preferred	\$58,863,181
Common	151,945,353
Total	\$210,808,534

and the balance sheet at that date shows the surplus to be \$81,482,923, reflecting a book value for the preferred and common stock of \$138.65 per share. Deducting from the surplus the underwriters' commission, and the premium to be paid in the retirement of the \$35,000,000 of bonds, with the sale of the \$63,242,500 of stock at \$107.50 the book value at May 1, 1927, becomes \$131.37. The market value of the common shares of the company, as indicated by the quotations on the New York Stock Exchange from January 1, 1927 to June 9, 1927, when the shares were offered at \$107.50, is as follows:

	High	Low		High	Low
January, 1927..	113¼	106½	April, 1927.....	119¼	112¾
February, 1927..	115¾	109	May, 1927.....	124¾	117½
March, 1927....	115¾	110¾	June 1-9, 1927..	124¾	121¾

Having before them the financial needs of the company, and in the light of the foregoing facts which were also before them, the president and board of directors reached the determination expressed in the resolution that the price of \$107.50 was reasonable and in the best interest of the company, and consequently in the interest of its shareholders. While the issue of \$63,242,500 of stock is equal to 30 per cent of the total present capital stock (preferred and common) it constitutes an increase of over 40 per cent in the common shares outstanding, and in order that the consummation of the transaction might be assured, and the necessary financing successfully accomplished, the president and directors deemed it advisable to effect an underwriting.

In the matter of the issue and sale of its shares, the Baltimore & Ohio is not subject to the general laws of the state of Maryland, for the reason, that under the special charter granted to it under act of the legislature of Maryland on February 28, 1827, the conditions under which the capital stock may be increased are specifically set forth. Section 13 of this charter authorizes the president and directors, or a majority of them, to increase the capital stock by the addition of as many shares as they may deem necessary for which they may at their option cause subscriptions to be received in the manner prescribed by them or may sell the same for the benefit of the company for a sum not under their par value.

The company's original capital stock has been increased from time to time by action of the president and directors without reference to or approval of the shareholders. Approval of the shareholders is not required and the president and directors have full authority in the matter of increase of the capital stock, subject to the approval of the commission.

Complaint has been made as to the payment of \$1,422,956, or \$2.25 per share, to Kuhn, Loeb & Co., Speyer & Co., and the National City Company, and the claim is made that the stockholders of the railroad company are adversely discriminated against by the terms of the proposed sale because such terms in effect permit such bankers to purchase the additional shares at \$105.25 per share, while the petitioner and other stockholders of said railroad company must pay \$107.50 per share.

These bankers have no right or privilege to acquire stock at

\$105.25 per share, on the contrary all of the shares are offered to and may be acquired by the stockholders, but the bankers are obligated, in the event of failure on the part of any or all of said shareholders, to take and pay for said shares at \$107.50.

The petitioner confuses two distinct questions:

The bankers, as pointed out, do not secure, nor do they have option to secure, the stock on any different basis than that at which the shareholders of the company may acquire the same. The bankers, however, are to be paid a commission of \$2.25 per share for their services in underwriting the entire issue. Such underwriting, in the judgment of the directors of the company, was necessary and desirable, first, because of the large sum of money involved (\$63,242,500); second, because the issue represents a large increased percent in the total stock outstanding, namely 30 per cent, and of the common shares only of the company outstanding, a 40 percent increase; third, because of the possible fluctuations in the market, and fourth, because of the knowledge that a large amount of shares of the company were held by interests which might not be in position to or elect to subscribe for the shares of stock to which they are entitled, notably some 55,000 shares held by the Alien Property Custodian, which might result in an unusually large proportion of the rights being offered for sale on the market.

In the judgment of the president and board of directors the payment of the \$1,422,956 as an insurance that the issue would be successfully accomplished and fully realized was a wise precaution in the interest of the company and the stockholders thereof. That such an underwriting was desirable is evidenced by the general practices of the Baltimore & Ohio and other railroad companies in similar situations.

\$2,100,000 Interest Charge to Be Saved

Some of the considerations leading to the determination to retire the \$35,000,000 of 10-year 6 per cent bonds have been stated. At the time of the issue of these obligations provision was made that they may be retired at any interest period upon 60 days' notice by the payment of a premium of 2½ per cent. This provision in the indenture was for the purpose of affording the company an opportunity to take advantage of the situation should a favorable time appear for refunding this obligation at a lower rate of interest or to retire it through the sale of stock. The present offered an opportune time to retire this obligation and to relieve the company of a fixed interest charge of \$2,100,000 per annum prior to dividends.

It is true with the reduction in the amount of interest charge there is a proportionate increase in the income subject to federal taxation, under the present basis of taxation by the federal government. In the judgment of the president and board of directors, however, the disadvantage that might appear to retirement of this fixed obligation by the payment of a premium of 2½ per cent and the assumption of the increased federal income tax, is more than offset by the advantages which accrue to the company by reason of its improved capital structure and by eliminating for all time this continuing obligation of the bonds. If the bonds were permitted to run to maturity and were then renewed or extended as bonds it would be necessary to pay a banker's commission on such renewal which perhaps would equal if not exceed the amount of the premium now paid to effect their permanent retirement.

The financial situation of the company is further improved by the issue of the shares of stock for the purpose of additions and betterments to the property made and to be made, instead of issuing additional mortgage obligations for such purpose, with consequent additional fixed interest charges.

Effort is made by the petitioner to show a loss due to the sale of stock in advance of the requirement to retire the \$35,000,000 of bonds at January 1, 1928, and in this connection the petitioner makes assumptions for which there are no bases in fact.

In order that the proceeds from the sale of shares should be realized as nearly as practicable at the time when the funds would be required, subscriptions are made payable 30 per cent on July 21st and 70 per cent on December 1st. Should the shareholders deem it to be in the interest of the company to defer payment until December 1, in order that the company may be saved the interest on the advanced payment of the funds, they may do so. In order, however, that all those electing to become shareholders might do so on the basis of the dividends being realized, and in order that there should be no discrepancy between the value of subscriptions paid and the actual stock outstanding, provision was made that stockholders might make full payment on July 21 instead of proportionate payments July 21 and December 1. What rate of interest will be realized from the deposit of such funds as might be paid in anticipation will depend upon the condition of the money market at the time, and the opportunity which may offer for the investment of such funds pending their requirement.

There is no commitment or obligation to deposit any of such funds with any particular bank, or at any rate of interest.

Looking Backward

Fifty Years Ago

Daily foreign car reports are requested so urgently by three superintendents at Cleveland and the president of the Louisville & Nashville that we may expect in time to find the practice of making them general. What is required is that each company may be informed daily as to what each of its cars has done and where it is on every day that it is away from the home line.—*Railroad Gazette*, July 13, 1877.

The Chesapeake & Ohio seems to have become a competitor for traffic between tidewater and the southwest. From Richmond to the Ohio river at Huntington it has a line of 421 miles, and to Cincinnati by boat is 160 miles farther, making the total distance from Richmond to Cincinnati 581 miles. The Baltimore & Ohio and the Pennsylvania lines from the seaboard to the same point are each longer, and the possible extension of the C. & O. is a disturbing element in the harmonious combination which is necessary to the prosperity of the great railway lines.—*Railway Age*, July 19, 1877.

Twenty-Five Years Ago

The 23-mile line of the Pacific Electric between Los Angeles, Cal., and Long Beach, was opened for business on July 4. This line is built with heavy rails and equipped with high-speed cars.—*Railroad Gazette*, July 18, 1902.

The New York Central & Hudson River has awarded a contract for the equipment of its line from One Hundred and Fifty-fifth street, New York, to Yonkers, 8 miles, with a system of automatic electro-gas block signals to be operated on the normal danger plan. Carbonic acid gas is used for the operation of the signal mechanism.—*Railway and Engineering Review*, July 19, 1902.

Lately the St. Louis & San Francisco managers have pursued a policy of expansion, which is designed to gain for them a permanent hold upon the valuable and growing traffic located between the Arkansas and Red rivers, as well as afford an entrance into Texas. Upon its reorganization in 1897, this company owned and operated 1,162 miles of line. In May, 1901, the Frisco and its consolidated lines reported a mileage of 2,970, while a year later it had grown to 3,374. No confidence is violated in stating that if all of the directors of the Atchison, Topeka & Santa Fe had realized in 1896 the possibilities of the Frisco territory, the present Frisco system would be known today by the name of Atchison instead of an independent title.—*Railway Age*, July 18, 1902.

Ten Years Ago

A bill to suspend the Pennsylvania full crew law for the period of the war, and for six months after the termination of the war, has been passed by the Pennsylvania legislature.—*Railway Review*, July 14, 1917.

The Northern Pacific, finding itself confronted with abuses of the reconsignment privilege, as were roads entering Chicago in connection with coal shipments last winter, has placed an embargo against all shipments of forest products which do not show final destination.—*Railway Review*, July 14, 1917.

The Interstate Commerce Commission has announced the creation of a car service division to administer authority over matters pertaining to car service given to that body by the Esch-Pomerene law. This law extends the jurisdiction of the commission over the movement, distribution, exchange, and interchange and also the return of cars.—*Railway Age Gazette*, July 13, 1917.

Communications and Books

Purchasing Electric Power

WILMINGTON, N. C.

TO THE EDITOR:

In your editorial, "Power for Electrification," *Railway Age*, June 18, you raise a question of contracts for electric power.

Railroads, taken collectively, represent the largest interests using electricity. In view of this and the inevitable increase in the use of such power, a standard form of contract should be framed which will be equitable to both parties, that is, the railroads as well as the power companies. To do this requires the elimination of objectionable clauses in contracts under which electricity is purchased at present.

Two clauses usually included in large power contracts are of such importance as to warrant careful consideration by both the power company and the prospective customers. These are the clauses relating to Demand and Power Factor.

These clauses in their present form have been a part of the contracts for years, and were first adopted when industries did not have technical men on their staff to safeguard their interests, the technical staff of the power companies being considered as having practically all the knowledge pertaining to electrical matters. In the present published contract forms, the power companies have so written these clauses as to unduly penalize the customer.

The demand meter is without doubt the only equitable means of determining the demand for large power. The usual demand meter used, indicates the average of the integrated demand over a period of 15 or 30 minutes. It is well known that all electric generating and transmission line equipment has an overload capacity of 25 per cent for two hours. Such being the case, a contract based on a 15- or 30-minute demand is unfair to the customer. The writer is of the opinion that demand should be based on not less than one hour.

In some instances the power company has realized the injustice of the short demand period, and takes the average of several demand readings in order to establish the demand for billing purposes. This, however, is only subterfuge, for unless the period during which the demand is established is continuous it does not bear a true relation to the plant and line capacity which is the prime reason for the demand clause.

Furthermore, demand rates should be much less for "off peak" than for "on peak" loads, as plant and line capacity is determined by peak load requirements and peak load energy rates have been established so as to cover the interest and depreciation charges, and when these items are again charged to off peak users the power company is doubly penalizing its patrons. "Off peak" customers should have only a very small, if any, demand charge, since the power used by them is only at the expense of the operating cost and bears no relation to plant capacity and very little to line capacity. The off peak load, however, actually reduces cost per kw. hour for generating energy since the plant must be kept in operation.

Another feature relating to demand which is unfair to the customer, especially the "off peak" customer, is the "ratchet" clause, which specifies that "A demand once established shall be the billing demand for a long period (usually from 3 to 12 months) unless exceeded, in which case the newly established demand shall be used, dating from date established." This is a one-sided contract and unfair to the customer, especially the off peak customer, penalizing him over a long period for a possible accidental excessive demand for a very short period.

The power companies claim that this demand charge is to cover overhead charges for the equipment necessary to insure service to the customer. The "on peak" user is penalized for this expenditure by having to pay a high rate for energy, and the off peak user is again penalized for the same item. The railroad company must maintain and keep in readiness the necessary cars, locomotives, track and roadbed, to transport coal or other commodities required by its customers, but if

any attempt was made to require them to pay a demand as outlined above, to cover overhead charges, the power companies would be among the first to complain.

Contracts for power furnished on demand bases should have the demand established each month to apply to that month's bill only.

The power factor penalty clause as in present contract forms is also objectionable. If a penalty is to be applied for failure to maintain stipulated power factor, a premium should be allowed for maintaining a higher value.

Power factor corrective apparatus, in very small units, is expensive. If a customer is required to install such apparatus and in doing so maintains a higher power factor value, the power company receives practically all of the benefits and the customer should, therefore, be allowed a premium for power factor in excess of the contract requirements to apply to the cost and maintenance of the equipment or apparatus.

This is on the assumption that a suitable and satisfactory means can be found to determine the power factor. However, several methods of doing this have been proposed and some have been tried, but the writer has been advised by representatives of two large power corporations that they did not apply the penalty clause because no satisfactory means of measuring the power factor over a period of time has been devised.

Power factor is an instantaneous value and does not bear any fixed relation to the load. A very heavy load may have a very high factor and a light load, a very low factor, or vice versa. To obtain an average over a period would require considerable calculation.

The writer feels that those who will gain the greatest benefit by power factor correction are the power companies and that they can make the corrections at points on their system much more reasonably than the customer, as they can use larger corrective units and are in better position to give it proper attention than a large majority of their customers.

The two clauses mentioned are the ones which should be given most consideration and if power companies desire to furnish electricity in large quantities to the railroads, it is the writer's opinion that these two clauses must be modified, otherwise the railroads will be driven to the installation of their own power plants to furnish their demands. If this is forced upon them it will materially delay the time when the power companies will be able to furnish them with their power requirements.

C. R. SUGG,

Electrical Engineer, Atlantic Coast Line.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian,
Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Development of the American Railroad. An address before the Shreveport Traffic Club, by B. S. Atkinson. 40 p.

Diamond Jubilee of the Confederation of Canada. Sixty Years of Canadian Progress, 1867-1927, by Dominion Bureau of Statistics. viii, 167 p. Pub. by F. C. Acland, Ottawa. Transportation and Communications, p. 103-111.

Editorials on the Centenary of the Baltimore & Ohio Railroad Company, issued by the Central Committee on Public Relations, Baltimore & Ohio Railroad Company. 168 p. Baltimore.

Periodical Articles

America's Longest Tunnel; Rapid Construction of the Greatest Tunnel to Be Built in the New World, by Charles F. A. Mann. Describes work on the Cascade tunnel of Great Northern railway. Scientific American, July, 1927. p. 40-42.

Notes on Locomotive Terminal Improvements, by Robert W. Weidenbacker. Baldwin Locomotives, July, 1927. p. 53-63.

Odds and Ends of Railroading

"Joining the Birds"

He hit a mule at Mile Post 10
That put him on the ground,
While making fifty miles an hour,
On Number 8, north-bound.
He cleaned the clock and gave her sand,
And joined the "birdie" team,
The Mountain "Jack" turned over once
And lay, emitting steam.
He broke a leg and bent his face,
The fire-boy skinned his ear,
Three mail clerks shaken up a bit,
No passengers injured here.
This "hogger" knew and did his stuff
Nor stayed anent his post,
He lives, and laughs about his work,
Which is the uttermost.

J. B. SEARLES.

The roster of railway musicians would not be complete without mention of Elmer Carlson, purchase bill clerk, Oregon-Washington Railroad & Navigation Company, Portland, Ore. Elmer is a regular one-man band. He plays the piano, bass horn, violin, tuba, French horn, bassoon and cornet and is an accredited teacher on most of them. Among his other musical activities, he plays with a dance orchestra, in the Oregon National Guard band and in the Union Pacific band.

Another highway on a railroad right-of-way, which will compare with the famous Lackawanna Trail in Pennsylvania, is being suggested for Rhode Island. Years ago Grand Trunk interests projected the Southern New England Railway which would have given the parent company and the Central Vermont a new tidewater outlet at Providence. Construction began and the roadbed was almost ready for rail laying when work was stopped. Now there is an unused right-of-way crossing all principal streets at separate grade and its acquisition by local authorities for the construction of a belt highway is being actively discussed.

The following entry in the Largest Railroad Family Contest is made by J. E. Fairhead, superintendent of the Saratoga division of the Delaware & Hudson:

John Tario, conductor.....	46 years' service
Frank Tario, switchtender.....	45 years' service
Peter Tario, trainman.....	44 years' service
Ezra Tario, trainman.....	34 years' service
Obie Tario, trainman.....	32 years' service
Paul Tario, trainman.....	17 years' service
Frank C. Tario, fireman.....	16 years' service

The first five named are brothers, the latter two are sons of Peter and Frank, respectively, and the combined service of the family to the D. & H. is 234 years.

Although James J. Geraghty has worked for a railroad for 23 years, he is still affected by the romance of locomotives and cars. Mr. Geraghty is by vocation a traveling auditor for the Great Northern and a toy train maker by avocation. He has made hundreds of toy trains, which have been sold in various parts of the country, some of them have even gone as far afield as Japan and France. Mr. Geraghty is also the maker of the exhibit on display at the St. Paul public library, which includes figures showing the transition of modes of transportation, including primitive dog sleds, ox carts, covered wagons, stage coaches and modern trains.

There does not seem much question about the efficacy of colored locomotives in attracting the attention of the public. The last year has seen a considerable development of the idea, until now not less than six important roads have some locomotives painted in colors which depart from the conventional black. The latest addition to the list is the Boston & Maine,

which has specially painted two locomotives to handle the "Minute Man." One of these is illustrated on another page of this issue. Railroad "fans" who are interested in developments of this sort will have an opportunity to see the practice of one of the large English roads in this regard when the "King George V," a new locomotive of the Great Western Railway of England, appears on exhibition at the Baltimore & Ohio centenary exhibition this fall.

Make Haste Slowly

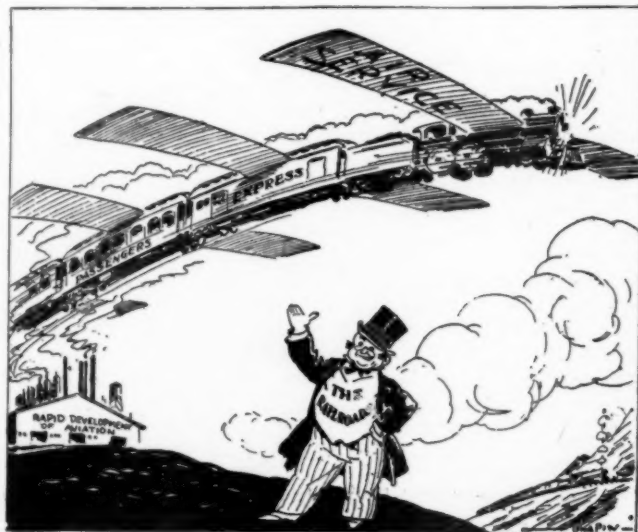
Seeing with what kindly and benevolent disposition you have treated some of the railroad jokes of the last century, writes a friend, it occurred to me that you will want to put into your record, at some time, the story about Jimmy Perkins, the local freight conductor; the Perkins who had the advantage of being unable to talk to much purpose, when excited, without stuttering. Jimmy was a conductor, as I remember the story, on a north and south road in Michigan. This story, you will understand, relates to that ancient time when, as expressed by one superintendent, we used to hide in the bushes to watch the trains and make sure that the freights did not exceed the authorized speed. Fifteen miles an hour was the rule patterned after the laws of the Medes and Persians. That is to say, it was the rule, as expressed on the back of the time-table. How well the rule was carried out, deponent hath nothing to say at this time.

One hot day in summer, when local work was pretty heavy, Perkins had to unload 50 barrels of flour at a way station; and in accordance with the fashion existing at some loading stations in those days, the 50 were in the ends of the car; and 20 or more barrels in the doorway, for a station farther on, had to be taken out and then rolled back in again—an extra task that never sweetened a freight conductor's temper. When finally ready to go—or about 90 seconds before the last barrel was in—Perkins, looking at his watch and seeing that 15 minutes had to be made up, somewhere, somehow, shouted to the engineer, "Come now, Billy, whoop 'er up!"

Turning to grab the hand-rail of the caboose, Perkins confronted the superintendent; not in the bushes, or in any secret place; right there on the platform, twice as large as life!

"What is the meaning, Mr. Perkins, of that phrase 'whoop 'er up!'" said the superintendent, in his smoothest manner.

"It means, said Perkins, "t-t-to p-p-proceed with extreme caution!"



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Will It Come to This?



SHERMAN T. HANDY has resigned as chairman of the Michigan Public Utilities Commission and will take up the practice of law at Lansing, Mich.

TRAIN DISPATCHERS on the Delaware, Lackawanna & Western have had their pay advanced ten dollars a month, the number of men benefiting by the order being about 50.

THE OFFICES of the auditor and treasurer, the general manager and the general agent of the North & South Railway have been removed from Casper, Wyo., to Salt Creek, Wyo.

THE SHOPS, power plant, roundhouse and storehouse of the Morrissey, Fernie & Michel, at Fernie, B. C., were destroyed by fire on July 3, with a total loss of \$50,000.

IN A FIRE near North Station, Boston, on July 6, the Boston & Maine lost eight wooden passenger coaches and other property to the total estimated amount of \$60,000.

THE COMMITTEE of DIRECTION of the Safety Section of the American Railway Association has decided that the next annual meeting of the section shall be held at Buffalo, N. Y., on May 16 and 17, 1928.

THE ANNUAL MEETING of the supervisory agents of the Seaboard Air Line will be held at Miami, Fla., on July 19 and 20. General and divisional officers, as well as all supervisory agents, will participate in the meeting.

W. J. TOWNE, chief engineer of the Chicago & North Western, is a member of a committee just appointed by Herbert Hoover, Secretary of Commerce, to report on the subject of a model on which municipal traffic ordinances can be based.

THE INTERNATIONAL BROTHERHOOD of Stationary Firemen, Oilers and Railway Shop Laborers has elected John F. McNamara of Boston, Mass., as president. Mr. McNamara succeeds Timothy Healy who was defeated for re-election after serving as president for 24 years.

THE INSTALLMENT PLAN of buying is said to have induced wives to spend more freely was cited as a fact supporting the

argument for increases in the wages of clerks of the Wabash at a hearing before an arbitration board at St. Louis, Mo., on July 10. Other evidence was produced to show that in many cases the wives of clerks had been obliged to seek employment in order to maintain the prevailing standard of living.

THE ATCHISON, TOPEKA & SANTA FE will hold its system annual picnic on August 3 at Ripley Park, Topeka, Kan. A parade will be followed by an athletic program and a series of other events at the park in the afternoon and evening. Prizes will be offered for the most artistic float, the best mechanical float, the best decorated cars, the most nearly unique float of a historical nature and the best comical float. Other prizes will be offered in athletic events, ball games and races.

AN INCREASE IN COMPENSATION for the transportation of United States mails, asked for by the railroads, was the subject of a hearing at Atlantic City, N. J., on July 13, before F. S. Mullen, examiner, Interstate Commerce Commission, the spokesman for the railroads calling attention to the fact that the compensation received by the railroads for mail carried, about \$100,000,000 annually, has not been changed since January 1, 1918, and that the service is now performed by the railroads at an annual loss of many millions. The post office department was represented at the hearing by Joseph Stewart.

G. N. Stores Officers Hold Convention

Over 50 storekeepers and other supply representatives of the Great Northern met in Havre, Mont., June 24-25-26 on the occasion of the fourth annual meeting of the Great Northern Stores Association, which is organized and conducts its sessions on the same general plan as Division VI of the American Railway Association. Papers on Uniform Accounting Control of Line Stocks, Master Stock Books, Bin Pricing, Office Methods, Delivery of Material to Users, Handling Material, Budgeting Purchases, Shop Orders and Store Department Accounting were among those presented at this meeting. Practically every storekeeper on the Great Northern participated. The meeting resulted in the elec-

tion of Robert Steel, district storekeeper at Great Falls, Mont., as chairman of the next year's meeting which will be held at a place to be determined upon later.

Railway Wage Statistics for April

The number of employees reported by Class I railways to the Interstate Commerce Commission for the month of April, 1927, was 1,758,471, an increase of 27,810 or 1.6 per cent over the number reported for March, 1927. The maintenance of way group shows an increase of 45,158, but all other groups show decreases. Owing mainly to the fact that April had one less working day than March, the total compensation, \$243,652,463, shows a decrease of \$6,003,117, or 2.4 per cent. Compared with the returns for the corresponding month last year, the number of employees shows a decrease of 1.4 per cent, and the total compensation increased 0.3 per cent.

B. & O. Centenary Exhibition Plans

The Baltimore & Ohio centenary exhibition and pageant will be held at Hialethorpe (a suburb of Baltimore) from September 24 to October 8 on a 1,000-acre tract owned by the railroad. On this tract a 6,000-ft. loop track has been built around a 25-acre plaza. On this track a procession of historical and contemporary locomotives and cars will move. There will be a grandstand 800 ft. long and, in addition, a Hall of Transportation, an Allied Service building, a replica of an old-time tavern and a motion picture theater. Admission will be free of charge. A pamphlet telling of the plans for the celebration may be obtained from the Centenary Director, Baltimore & Ohio building, Baltimore, Md.

Southern Pacific Athletic Meet

A bronze tablet mounted on a block of stone as a memorial to the late William Robertson Scott, former president of the Southern Pacific Lines in Texas and Louisiana, was unveiled at Houston, Tex., on May 28 as one of the features of the annual track and field meet of the Athletic Association of these lines. Below Mr. Scott's
(Continued on page 120)

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Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenue				Operating expenses				Operating ratio	Net from railway operation	Operating income (or loss)	Net revenue	Net operating income, 1926
		Freight	Passenger	Total	Misc.	Way and structures	Maintenance of equipment	Traffic	Transportation					
Louisiana Ry. & Nav. Co.	337	\$203,411	\$4,441	\$222,472	\$39,008	\$35,171	\$13,866	\$112,436	\$13,866	93.4	\$14,684	\$7,316	\$21,317	\$21,317
May	5 mos.	1,237,752	58,871	1,378,348	29,418	29,418	64,508	64,508	64,508	89.6	14,235	12,235	17,235	17,235
Louisiana Ry. & Nav. Co. of Tex.	206	67,089	3,796	74,664	18,198	18,198	3,796	3,796	3,796	106.0	4,162	8,197	12,388	12,388
May	5 mos.	397,186	20,858	437,118	11,532	11,532	69,583	206,386	30,700	99.0	4,502	15,556	19,210	19,210
Louisville & Nashville	5,064	10,167,726	1,661,183	12,546,688	1,938,280	2,774,855	254,189	4,330,791	332,672	77.3	2,843,644	2,212,093	2,196,598	2,233,416
May	5 mos.	48,389,904	8,373,100	60,125,120	9,205,786	13,970,408	1,307,567	21,256,727	1,666,891	79.2	12,478,989	9,618,235	9,355,021	10,483,729
Louisville, Henderson & St. Louis	199	245,115	57,512	323,072	67,871	48,751	9,119	105,204	13,144	75.6	78,983	59,487	56,862	56,862
May	5 mos.	1,326,142	257,063	1,669,703	288,334	249,750	37,874	541,627	58,943	70.5	493,175	385,729	351,232	351,232
Maine Central	1,121	1,209,449	244,039	1,605,326	305,443	338,936	18,463	649,102	291,155	84.8	243,510	129,587	123,518	194,652
May	5 mos.	6,440,621	1,459,995	8,634,826	1,342,517	1,649,726	72,789	3,457,727	291,680	78.9	1,822,178	1,252,494	1,030,960	1,047,812
Midland Valley	364	287,809	26,050	326,327	61,999	39,026	7,332	84,517	15,385	63.7	118,618	99,076	79,576	79,576
May	5 mos.	1,374,265	148,650	1,583,069	240,311	187,560	36,365	430,070	79,306	61.5	609,844	509,414	420,514	530,280
Minneapolis & St. Louis	1,627	873,297	78,131	1,014,700	331,777	264,240	32,916	499,740	43,554	117.4	176,591	235,804	303,024	298,757
May	5 mos.	4,591,662	470,893	5,363,458	1,039,275	1,368,733	176,103	2,671,584	232,410	102.2	116,091	379,966	526,804	526,804
Minneapolis, St. Paul & S. S. Marie	4,396	2,866,062	371,043	3,535,347	634,510	720,642	33,093	1,373,683	105,392	82.8	608,987	372,353	273,584	357,753
May	5 mos.	13,484,162	1,498,866	16,942,072	2,469,228	3,621,492	353,597	7,044,034	111,118	83.3	2,824,754	1,694,487	1,182,878	1,364,566
Duluth, South Shore & Atlantic	589	371,574	53,922	471,402	98,598	68,870	7,329	194,809	11,928	81.8	85,767	53,767	43,315	10,901
May	5 mos.	1,621,385	333,316	2,128,049	309,260	342,471	38,972	930,910	59,548	80.1	423,048	276,031	198,175	146,441
Spokane International	165	82,563	7,919	90,511	14,337	7,955	3,710	29,988	6,888	65.6	33,369	28,009	19,851	25,675
May	5 mos.	405,600	49,967	485,298	79,868	41,346	17,935	164,334	32,698	70.4	143,865	116,962	79,920	118,620
Mississippi Central	161	109,791	8,923	124,542	19,343	25,074	7,920	34,624	7,889	76.1	29,701	21,955	25,561	28,518
May	5 mos.	608,003	42,618	673,877	97,128	129,476	40,889	182,327	39,508	72.6	184,945	141,564	153,029	159,671
Missouri & North Arkansas	364	124,183	13,192	152,303	44,247	13,866	8,526	46,510	7,732	79.3	31,422	29,034	17,383	34,500
May	5 mos.	579,194	73,037	700,389	186,950	79,324	47,641	261,244	36,636	88.5	88,594	76,313	24,045	108,239
Missouri-Kansas-Texas	1,799	2,403,348	372,915	2,987,180	439,616	604,417	64,153	758,825	99,718	66.3	1,005,310	816,199	807,630	721,433
May	5 mos.	11,652,136	1,729,791	14,417,238	1,678,494	2,335,773	329,515	3,686,010	487,912	66.8	4,783,755	3,794,108	3,846,804	3,616,829
Missouri-Kansas-Texas of Texas	1,389	1,201,426	329,946	1,663,554	262,506	241,708	50,007	686,785	65,450	79.5	340,880	288,292	123,903	83,649
May	5 mos.	6,516,794	1,626,454	8,861,048	1,224,439	1,318,496	253,894	3,587,885	330,569	76.5	2,079,213	1,816,775	961,972	681,760
Missouri Pacific	7,354	7,842,290	1,086,121	9,276,659	1,982,121	1,932,967	317,928	3,926,955	362,204	87.5	1,218,861	807,414	415,972	1,310,216
May	5 mos.	40,416,885	5,938,815	50,475,987	8,128,888	10,133,136	1,455,932	19,516,012	1,781,617	81.6	9,271,876	7,114,199	5,186,062	7,238,994
Gulf Coast Lines	995	1,099,704	139,377	1,343,166	259,319	236,505	43,239	434,397	57,472	77.09	307,725	246,928	131,495	419,924
May	5 mos.	5,891,142	846,140	7,167,573	1,269,810	1,157,067	199,994	2,262,080	276,109	72.02	2,005,176	1,684,070	1,142,065	1,519,375
International-Great Northern	1,159	1,156,612	195,255	1,478,489	266,791	233,331	36,519	652,434	63,885	83.35	246,124	202,581	127,817	178,586
May	5 mos.	5,907,431	984,679	7,631,782	1,280,635	1,320,771	175,255	3,234,738	307,018	81.88	1,382,902	1,171,307	687,805	576,724
San Antonio Uvalde & Gulf	318	147,462	18,569	179,124	30,645	22,084	6,172	53,303	6,006	69.8	262,887	244,650	100,353	143,779
May	5 mos.	689,043	110,707	869,350	184,092	109,719	25,646	253,730	30,017	69.8	262,887	244,650	100,353	143,779
Texas & Pacific	1,954	2,493,010	400,729	3,088,650	633,113	537,689	71,497	1,090,108	96,356	79.0	648,744	491,373	322,545	296,930
May	5 mos.	12,312,010	2,304,582	15,627,077	2,710,120	2,906,163	356,591	5,586,474	495,155	77.3	3,540,113	2,756,363	2,016,027	1,624,105
Mobile & Ohio	1,161	1,382,010	101,592	1,573,146	223,112	273,613	56,526	571,747	50,071	77.4	398,665	305,532	255,865	237,068
May	5 mos.	6,589,016	521,181	7,529,885	1,120,978	1,337,823	268,872	2,798,143	239,629	76.6	1,764,793	1,343,259	1,115,418	1,418,291
Monongahela	169	556,256	25,158	586,814	75,000	65,000	1,107	150,528	10,167	51.2	286,133	262,112	157,888	144,008
May	5 mos.	3,085,106	134,940	3,299,475	375,000	325,000	5,427	875,059	49,854	50.1	1,621,396	1,469,711	968,195	816,641
Monongahela Connecting	7	.....	.....	179,237	16,707	16,707	375	74,793	3,184	73.0	48,305	38,403	36,057	37,554
May	5 mos.	.....	.....	904,277	85,028	169,479	1,873	388,109	16,232	73.1	243,556	194,600	178,858	188,463
Montour	70,435	70,435	142	79,743	33,783	41,885	1,009	17,747	9,374	130.2	24,055	25,153	4,604	31,455
May	5 mos.	539,995	1,730	544,690	115,720	224,739	6,062	127,099	44,789	95.2	26,271	514	158,816	53,104
Nashville, Chattanooga & St. Louis	1,259	1,520,297	309,917	1,979,367	304,559	380,485	77,679	700,120	78,116	78.0	434,901	364,743	368,723	171,989
May	5 mos.	7,149,605	1,634,442	9,498,895	1,267,254	1,945,777	428,215	3,520,029	402,446	79.9	1,910,364	1,547,356	1,661,528	1,488,061
Nevada Northern	165	65,413	5,753	78,919	12,116	5,031	881	15,098	4,828	48.4	40,695	30,032	32,050	31,672
May	5 mos.	324,702	32,016	393,765	64,595	25,195	4,644	79,662	23,259	50.4	194,893	157,283	138,124	138,124
Newburgh & South Shore	165	.....	.....	154,700	23,957	34,142	.....	62,359	4,465	82.3	27,367	14,484	15,135	607
May	5 mos.	.....	.....	716,076	87,621	189,042	.....	308,991	21,059	84.7	109,363	46,506	74,574	111,544
New Orleans Great Northern	274	207,824	23,556	247,265	43,653	41,715	8,148	71,210	10,653	70.2	71,711	58,336	40,786	50,102
May	5 mos.	1,159,147	117,060	1,375,696	211,723	235,118	38,385	369,242	15,652	70.2	419,701	335,244	238,761	230,288
New York Central	6,925	20,850,044	8,072,116	33,185,128	4,658,938	6,600,557	420,837	11,024,303	1,329,037	73.8	8,682,083	6,407,101	6,058,251	6,394,281
May	5 mos.	100,666,587	38,059,454	158,541,206	20,940,406	33,596,490	2,026,635	57,218,691	6,056,811	77.0	30,477,198	25,923,620	24,168,097	25,332,821
Cincinnati Northern	244	353,857	5,233	369,477	54,917	78,199	6,022	121,218	9,433	71.0	99,732	77,216	55,199	62,715
May	5 mos.	1,852,710	27,708	1,919,671	276,523	373,043	32,623	634,212	57,291	68.9	595,866	472,866	335,529	370,458
Cleve., Cinn., Chicago & St. Louis	2,397	5,729,717	1,293,102	7,698,764	979,109	1,586,798	136,721	2,875,840	243,447	76.6	1,800,025	1,369,771	1,245,576	1,431,741
May	5 mos.	28,446,208	6,221,223	37,798,772	4,149,785	8,551,697	715,046	14,364,403	1,371,658	77.3	8,571,409	6,502,336	6,003,382	6,471,608

Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1927—Continued

Name of road	Average mileage operated during period	Operating revenues				Operating expenses				Operating ratio	Net from railway operation	Operating income (or loss)	Net operating income	Net operating income, 1926
		Freight	Passenger	Total (inc. misc.)	Maintenance of way and structures	Equip- ment	Traffic	Trans- portation	General					
Indiana Harbor Belt.....	May 117	.....	.....	\$21,565	\$176,114	\$159,964	\$4,984	\$354,300	\$27,248	78.4	\$198,955	\$156,134	\$125,204	\$186,553
.....	5 mos.	.....	.....	779,468	1,680,183	1,734,060	2,044,333	2,044,333	2,044,333	76.3	1,284,846	1,284,846	1,284,846	733,756
Michigan Central	May 1,835	5,426,203	1,569,367	7,700,670	1,680,183	1,734,060	2,044,333	2,044,333	2,044,333	69.7	1,141,301	1,141,301	1,141,301	1,900,539
.....	5 mos.	25,526,685	7,551,391	36,718,666	3,814,668	6,938,747	12,412,478	12,412,478	12,412,478	69.7	1,141,301	1,141,301	1,141,301	2,244,728
Pittsburgh & Lake Erie.....	May 231	2,343,038	229,117	2,666,789	360,273	892,022	24,316	845,957	75,010	82.5	467,534	296,772	638,231	565,571
.....	5 mos.	11,207,508	1,151,454	13,497,169	1,838,125	4,571,888	123,910	4,529,554	405,347	85.0	2,019,114	1,271,992	3,073,299	3,073,299
New York, Chicago & St. Louis.....	May 1,691	14,298,848	1,551,399	16,050,247	1,838,125	4,571,888	123,910	4,529,554	405,347	70.6	1,055,173	1,055,173	1,055,173	912,843
.....	5 mos.	20,831,441	683,313	22,178,048	2,479,278	4,476,300	615,428	7,872,526	829,100	73.1	5,975,804	4,730,489	3,895,286	4,375,938
N. Y., New Haven & Hartford.....	May 2,175	6,478,099	4,104,160	11,784,081	1,824,092	2,072,843	88,568	3,950,380	331,396	71.7	3,330,383	2,822,698	2,133,278	2,057,888
.....	5 mos.	30,290,273	19,781,849	56,237,331	7,649,994	11,269,307	444,051	20,298,555	1,643,287	75.0	14,049,025	11,392,825	8,033,700	9,372,664
Central New England.....	May 1,691	14,298,848	1,551,399	16,050,247	1,838,125	4,571,888	123,910	4,529,554	405,347	70.6	1,055,173	1,055,173	1,055,173	912,843
.....	5 mos.	20,831,441	683,313	22,178,048	2,479,278	4,476,300	615,428	7,872,526	829,100	73.1	5,975,804	4,730,489	3,895,286	4,375,938
New York Connecting.....	May 20	199,619	.....	228,937	36,781	13,610	.....	57,717	1,463	47.9	119,366	81,866	69,656	118,502
.....	5 mos.	1,104,302	.....	1,253,621	115,419	69,013	.....	302,752	8,069	39.5	758,368	558,868	472,440	489,275
New York, Ontario & Western.....	May 569	792,595	166,013	1,132,802	156,202	198,419	18,380	466,579	32,900	77.3	257,177	206,567	154,923	197,304
.....	5 mos.	3,180,946	497,129	4,482,767	594,307	1,106,228	89,847	2,245,058	176,930	94.5	247,085	—4,583	—244,707	96,628
Norfolk & Western.....	May 2,241	8,697,192	569,175	9,588,962	1,268,736	1,933,891	116,103	2,470,246	212,811	62.5	3,596,866	2,745,143	2,986,610	3,230,163
.....	5 mos.	41,886,326	2,858,668	46,389,196	6,193,751	9,517,428	544,834	12,375,407	1,047,810	64.0	16,694,771	12,439,577	13,597,336	14,243,013
Norfolk Southern	May 931	6,924,660	491,138	7,893,300	1,133,176	1,168,820	25,919	304,286	29,041	72.8	214,418	165,675	159,634	155,717
.....	5 mos.	3,604,692	245,333	4,070,002	503,970	623,013	122,960	1,505,730	151,603	70.0	1,222,388	978,795	790,716	733,673
Northern Pacific	May 6,668	5,576,390	934,081	7,194,291	1,475,403	1,545,828	237,562	2,499,987	240,910	84.0	1,141,820	472,666	852,180	1,155,394
.....	5 mos.	26,189,678	4,420,926	33,685,612	5,404,665	7,132,284	1,021,411	12,715,401	1,247,750	82.7	5,825,163	2,493,736	4,192,250	5,760,936
Northwestern Pacific	May 477	303,015	184,959	547,834	99,215	77,111	7,504	220,801	21,855	77.8	121,619	80,932	70,671	100,208
.....	5 mos.	1,289,107	698,843	2,211,882	475,855	407,972	30,007	1,029,091	103,913	92.2	172,143	—31,440	—74,841	145,455
Pennsylvania R. R.....	May 10,510	40,383,827	11,854,214	57,585,761	7,417,268	11,709,422	831,637	20,595,556	1,622,821	74.5	14,697,814	11,303,877	10,097,095	9,064,113
.....	5 mos.	194,645,125	57,698,569	277,277,651	34,551,207	61,072,115	3,864,677	105,356,157	7,919,400	78.0	60,923,457	48,355,059	42,203,718	33,875,449
Baltimore, Chesapeake & Atlantic.....	May 130	91,480	26,791	125,452	14,270	57,349	1,941	75,065	3,483	131.3	—76,762	—32,199	—34,537	—40,705
.....	5 mos.	321,632	108,891	457,452	53,171	193,292	8,124	365,119	16,566	139.1	—178,820	—185,791	—192,301	—169,123
Long Island	May 401	1,099,577	227,624	3,595,275	565,431	566,012	33,293	1,408,099	85,100	74.3	924,286	675,655	467,485	507,382
.....	5 mos.	4,753,384	958,924	15,355,715	2,559,315	2,818,209	151,396	6,892,315	328,288	84.1	2,434,709	1,834,373	1,012,414	1,253,058
West Jersey & Seaboard.....	May 378	453,075	468,962	967,851	161,279	158,022	19,893	433,800	26,746	82.7	167,489	84,999	67,940	141,037
.....	5 mos.	2,075,752	2,046,531	4,326,998	759,932	825,672	79,400	2,199,389	123,697	92.2	336,642	218,405	159,849	238,714
Peoria & Pekin Union.....	May 19	19,551	2,158	135,238	22,011	15,409	1,196	63,755	7,566	81.0	25,301	8,301	26,543	50,274
.....	5 mos.	118,628	14,752	760,620	71,823	78,153	5,244	338,318	38,758	70.0	228,324	143,324	231,905	271,905
Pere Marquette	May 2,243	3,359,117	247,011	3,827,428	596,491	821,376	63,766	1,231,528	115,789	74.1	1,917,757	785,316	655,538	573,830
.....	5 mos.	15,714,585	1,791,807	17,941,807	1,739,007	3,946,520	297,508	6,179,956	550,438	71.1	5,162,805	4,184,643	3,567,771	3,407,906
Pittsburgh & Shawmut.....	May 102	108,454	2,746	113,867	21,247	56,381	1,345	35,697	12,197	111.4	—13,000	—14,159	3,846	30,096
.....	5 mos.	635,141	24,790	671,262	100,874	248,670	8,405	205,835	48,519	91.2	58,959	53,196	105,652	200,692
Pittsburgh & West Virginia.....	May 92	232,684	6,356	270,163	14,428	66,096	10,655	56,481	29,481	69.5	82,393	48,563	100,334	154,834
.....	5 mos.	1,798,165	32,036	1,991,537	121,222	320,344	47,020	398,560	133,885	54.5	906,988	630,628	994,233	946,747
Pittsburgh, Shawmut & Northern.....	May 198	123,091	2,216	129,297	31,391	27,543	1,379	47,903	7,148	89.1	14,023	11,110	—529	10,780
.....	5 mos.	740,307	15,310	774,947	132,296	158,382	8,037	306,094	33,645	82.4	136,493	121,465	68,811	63,806
Quincy, Omaha & Kansas City.....	May 249	49,999	12,221	69,193	38,600	8,746	718	21,604	2,710	104.6	—3,199	—9,109	—12,065	—33,988
.....	5 mos.	216,451	68,415	318,407	142,932	64,358	3,873	145,020	13,388	115.8	—50,211	—79,593	—93,198	—95,203
Reading	May 1,119	7,105,021	771,714	8,340,753	1,250,773	1,809,843	93,501	2,927,039	207,564	76.4	1,946,714	1,478,615	1,543,057	1,528,107
.....	5 mos.	34,332,820	3,800,033	39,995,839	5,043,636	8,887,644	409,703	15,247,837	1,018,270	76.6	9,375,873	7,263,788	7,324,180	7,830,990
Atlantic City	May 161	126,340	160,345	307,917	42,917	34,913	3,328	186,446	25,987	101.4	—26,757	—38,992	—56,781	—66,492
.....	5 mos.	652,653	610,564	1,347,731	479,162	154,605	24,624	930,376	25,987	119.4	—267,657	—38,992	—56,781	—66,492
Perkiomen	May 41	91,802	4,528	99,402	18,625	6,637	106	48,094	1,150	75.1	24,743	20,724	13,026	44,119
.....	5 mos.	462,444	20,188	498,301	57,083	30,750	537	229,675	5,681	65.0	174,350	149,959	115,567	170,848
Fort Reading	May 19	153,535	.....	194,949	26,695	7,058	229	67,342	1,457	52.7	102,781	65,759	560	—6,241
.....	5 mos.	837,369	.....	1,114,096	153,713	40,598	1,145	382,224	11,144	52.9	525,295	437,183	80,802	112,725
Richmond, Fred'sburg & Potomac.....	May 117	622,994	298,692	1,098,124	144,615	166,025	9,042	371,701	34,408	68.7	344,149	277,192	208,920	296,902
.....	5 mos.	2,505,330	1,943,279	5,385,839	567,269	873,441	44,331	1,945,344	178,961	70.1	1,609,411	1,282,147	930,058	1,467,852
Rutland	May 413	340,644	79,753	535,717	—0,842	91,092	11,781	209,099	15,487	78.4	135,745	84,885	92,368	79,359
.....	5 mos.	1,570,107	458,517	2,552,872	427,350	522,280	54,633	1,064,704	74,320	84.3	401,819	269,775	314,696	360,610
St. Louis-San Francisco.....	May 4,951	5,223,274	1,145,627	6,951,995	987,387	1,298,384	116,033	2,325,921	255,988	72.0	1,944,885	1,549,729	1,578,582	1,739,372
.....	5 mos.	25,874,232	5,711,512	34,146,416	4,588,565	6,721,817	571,086	11,629,961	1,232,223	71.8	9,643,443	7,754,987	8,091,123	8,462,452
Ft. Worth & Rio Grande.....	May 233	72,319	13,462	96,596	23,643	27,623	2,643	52,631	5,117	116.8	—16,215	—20,268	—30,204	—11,089
.....	5 mos.	371,876	74,301	498,665	119,107	108,027	15,924	268,289	26,942	107.8	—38,698	—59,068	—100,288	—64,535
St. Louis, San Francisco & Texas.....	May 137	157,086	13,081	175,560	35,204	28,078	8,330	135,481	8,330	77.2	36,993	36,993	12,970	818
.....	5 mos.	728,276	69,944	870,314	14,970	18,700	25,895	306,677	39,106	75.3	215,357	202,045	153,661	186,883
St. Louis Southwestern.....	May 940	1,242,426	92,621	1,498,583	366,797	219,713	63,037	408,398	65,919	79.8	1,400,097	1,104,097	1,104,097	1,104,097
.....	5 mos.	6,016,762	474,922	6,875,718	1,246,798	1,100,422	312,672	1,903,756	328,464	71.9	1,931,958	1,694,168	1,284,731	1,580,371

Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenues				Operating expenses				Operating ratio	Net from railway operation	Operating income (or loss)	Net operating income	Net operating income, 1926
		Freight	Passenger	Inc. misc.	Total	Way and structures	Maintenance of equip.	Traffic	Trans- portation	General				
St. Louis Southwestern of Texas, May 5 mos.	807	\$451,206	\$50,814	\$544,838	\$1,112,257	\$111,981	\$112,257	\$28,755	\$243,994	\$32,570	\$9,079	\$36,090	\$12,621	\$25,869
Seaboard Air Line, May 5 mos.	4,266	2,124,991	4,947,024	28,730,563	34,946,999	4,098,639	4,098,639	1,009,210	11,108,818	1,022,869	7,511,205	5,904,424	5,143,219	4,819,378
Southern Ry., May 5 mos.	6,771	9,330,247	2,104,463	12,413,413	18,727,207	2,260,807	2,260,807	266,211	4,142,906	332,570	3,463,604	2,668,946	2,598,907	2,464,802
Alabama Great Southern, May 5 mos.	314	45,509,524	10,929,680	61,223,217	8,293,728	11,402,855	11,402,855	1,316,241	21,102,562	1,697,417	16,391,620	12,663,490	11,848,263	12,574,577
Cinn., New Orleans & Tex. Pacific, May 5 mos.	338	7,000,975	1,578,735	9,105,915	1,437,147	1,840,946	1,840,946	217,516	2,738,941	261,414	2,526,196	2,026,334	1,894,313	2,475,635
Georgia Southern & Florida, May 5 mos.	401	2,098,982	80,280	409,187	114,721	92,020	92,020	12,979	175,271	12,190	80,881	22,696	41,763	78,948
New Orleans & Northeastern, May 5 mos.	110	1,074,746	7,680	111,946	23,997	4,115	4,115	2,718	36,741	2,798	252,387	223,598	103,890	93,589
Atlantic Steamship Lines, May 5 mos.	8,929	12,842,406	3,336,301	18,037,098	2,476,946	3,022,537	3,022,537	408,872	5,898,583	696,178	5,186,375	3,745,901	3,370,498	3,244,707
Texas & New Orleans, May 5 mos.	4,590	4,439,468	944,475	5,889,163	1,148,101	1,570,013	1,570,013	160,052	2,236,876	274,125	1,302,751	617,933	361,605	60,413
Spokane, Portland & Seattle, May 5 mos.	554	567,560	100,327	726,994	105,152	98,848	98,848	14,168	205,180	21,625	77,357	298,344	271,172	211,596
Tennessee Central, May 5 mos.	296	261,358	23,553	297,310	17,384	23,831	23,831	3,726	43,542	5,799	37,743	1,887,832	1,765,829	1,826,393
Terminal Railroad Ass'n of St. L., May 5 mos.	55	1,142,780	121,867	1,355,846	223,384	223,384	223,384	43,077	501,417	30,529	197,937	205,185	124,322	89,039
Texas Mexican, May 5 mos.	162	94,744	5,214	115,333	17,384	23,831	23,831	3,726	43,542	5,799	37,743	1,887,832	1,765,829	1,826,393
Toledo, Peoria & Western, May 5 mos.	239	577,076	36,992	659,961	149,499	106,352	106,352	36,992	297,260	37,523	627,611	69,153	21,111	84,594
Toledo Terminal, May 5 mos.	28	163,526	7,723	171,249	29,969	29,969	29,969	535	49,687	4,953	44,734	23,931	21,111	20,465
Trinity & Brazos Valley, May 5 mos.	367	1,035,269	39,573	1,074,842	290,370	158,394	158,394	26,782	534,669	60,832	21,475	18,839	30,187	16,148
Ulster & Delaware, May 5 mos.	128	56,915	10,285	102,855	20,102	16,039	16,039	1,313	50,102	4,890	13,668	7,918	2,992	8,363
Union Railroad of Penna., May 5 mos.	45	201,856	29,481	292,472	82,338	80,753	80,753	6,654	212,373	25,635	15,728	44,031	59,278	55,588
Union Pacific, May 5 mos.	3,714	5,987,371	1,333,922	8,140,704	1,341,237	1,771,635	1,771,635	879,895	11,146,885	1,659,578	27,793,327	73,000	1,430,906	1,283,482
Oregon Short Line, May 5 mos.	2,537	1,028,026	158,048	1,286,074	220,179	2,345,460	2,345,460	258,627	3,943,181	629,154	3,179,798	1,902,176	1,599,200	1,726,809
Oregon, Wash. R. R. & Nav. Co., May 5 mos.	2,237	1,681,705	292,947	2,182,715	533,956	379,221	379,221	83,750	836,439	127,345	1,984,675	7,839	116,031	193,928
Los Angeles & Salt Lake, May 5 mos.	1,208	7,352,860	1,768,485	10,047,098	1,974,031	2,133,041	2,133,041	419,618	3,279,791	385,279	1,430,284	765,379	302,284	362,118
St. Joseph & Grand Island, May 5 mos.	258	223,387	11,728	255,964	69,911	42,687	42,687	2,761	91,058	15,756	22,173	20,665	8,278	35,960
Utah, May 5 mos.	111	709,324	36,992	746,316	232,749	196,467	196,467	15,728	404,881	75,078	229,803	120,617	20,465	20,465
Virginian, May 5 mos.	545	1,669,184	50,260	1,845,409	234,463	377,646	377,646	13,455	384,445	35,516	1,033,033	662,242	703,295	699,829
Wabash, May 5 mos.	2,524	4,510,325	718,255	5,638,774	971,042	1,005,597	1,005,597	163,552	1,942,772	166,387	5,066,642	4,048,058	3,234,368	3,234,368
Ann Arbor, May 5 mos.	293	443,777	18,704	476,691	65,328	98,883	98,883	10,847	175,029	11,064	359,744	89,609	76,533	79,862
Western Maryland, May 5 mos.	804	1,671,120	42,054	1,780,123	295,680	410,737	410,737	38,444	489,710	41,401	1,279,911	448,286	359,950	358,655
Western Pacific, May 5 mos.	1,042	1,022,236	141,330	1,250,816	312,781	288,507	288,507	46,856	422,454	44,393	1,146,781	19,538	25,682	192,927
Wheeling & Lake Erie, May 5 mos.	511	1,379,201	32,690	1,543,345	193,882	373,803	373,803	34,750	476,732	64,311	1,145,191	266,111	339,510	339,510
	511	7,230,257	160,702	7,874,754	928,698	1,918,372	1,918,372	167,495	2,435,680	234,954	5,693,947	1,518,701	1,505,569	1,558,768

News of the Week

(Continued from page 113)

name and the date of his death the tablet carries the following inscription in bas-relief: "The father of athletics on these lines and an advocate of the virtues emanating from mental, moral and physical vigor developed through manly sports. A great and good man. Erected by employees of the Southern Pacific, Texas and Louisiana Lines." A silver vase was presented to a team of employees from Houston as the winner of the meet by H. M. Lull, executive vice president. More than 150 employees participated in the athletic events, before a crowd of 5,000 spectators.

Wage Hearings in Chicago

The United States Board of Mediation was asked on July 11 to participate in the conference between the Brotherhood of Locomotive Firemen and Enginemen and a committee of managers of the western railroads which was begun at Chicago on July 7 to discuss the demands for increases in wages for firemen and hostlers. Approximately 50,000 employees on railroads west of Chicago, including the Illinois Central, the Wabash and the Chicago & Eastern Illinois, are involved. During the first three days of the conference no agreement was reached.

Arbitration hearings on the demand of the Brotherhood of Maintenance of Way Employees for an increase of five cents an hour for employees of the Chicago & North Western and on a demand by the Brotherhood of Railway and Steamship Clerks, Freight Handlers and Station Agents for a general wage revision for employees of the Illinois Central, opened at Chicago on July 8. About 13,000 employees are involved on the North Western, and 9,700 on the Illinois Central. The chairman of the board hearing the maintenance of way employees' case is Homer B. Dibell, chief justice of the Minnesota State Supreme Court. Other members are E. C. Davies of Northwestern University, J. J. Farnum, office head, and E. E. Mileman, secretary, of the brotherhood; and William Walliser, vice-president, and C. H. Westbrook, assistant general auditor, of the Chicago & North Western.

Judge William Rogers Clay of the Kentucky Court of Appeals is acting as chairman of the board hearing the Illinois Central case. Other members are A. M. Mallard of the Chicago district of the Masonic Bureau, Phil E. Ziegler, editor of the journal of the brotherhood, R. P. Dee, vice-president of the brotherhood, and E. C. Craig, general attorney, and G. J. Bunting, vice-president, of the Illinois Central.

The North Western employees ask an increase of five cents an hour, which would total \$1,750,000 a year. The employees argue that their wages have been decreased since 1921, while the cost of living and other wages have increased.

The demands of the Illinois Central employees for an increase of 10 cents an hour would amount to \$3,060,000 a year. They argue that the road has been and will continue to be prosperous and can afford to increase the wages of the clerks.

The American Association of Railroad Ticket Agents will hold its ninth annual convention at Washington, D. C., on October 11 to 14.

The Chicago, Milwaukee & St. Paul, using roller bearings on the cars of its Pioneer Limited trains between Chicago and St. Paul-Minneapolis, 421 miles, announces that, beginning with August 1, the cars of the Olympian will have roller bearings. The Olympian runs between Chicago and Seattle, 2,190 miles.

Colonial Air Transport, operating airplanes between New York and Boston, announces that hereafter breakfast will be served on the airplane on the northbound trip in the morning and a six-course chicken dinner on the south-bound trip in the afternoon. Food will be prepared on land and kept warm by electric heaters.

Daily air passenger service was established between St. Paul, Minn., and Chicago on July 6 by the Northwest Airways, Inc. The first ship, which carried as passengers L. R. S. Ferguson, president of the St. Paul City Council, and Byron G. Webster, representing the St. Paul Association, made the trip from St. Paul to Chicago in about 10 hours.

The St. Louis-San Francisco, during the strawberry season this year, moved a total of 1,950 cars, a greater number than in any previous year. Sarcoxie, Mo., the largest individual originating point, shipped 260 cars; Springdale, Ark., the second, shipped 256 cars, and Monett, Mo., the third, shipped 110 cars. At Monett a total of 1,387 cars were handled over the ice docks.

The Rose City Traffic Club has recently been organized in Portland, Oregon. The officers are: President, H. L. Hudson, manager of the traffic department of the Port of Portland Commission; vice-president, R. W. Pickard, general freight agent of the Spokane, Portland & Seattle; and secretary-treasurer, W. O. Roberts of the Portland Draymen's and Warehousemen's Association.

Beginning July 9 and continuing until September 30, both of the lines between Philadelphia and Atlantic City, the Pennsylvania and the Reading, will sell round trip tickets from Philadelphia to the South Jersey seashore resort, good for two days, at about 30 per cent reduction from former prices. Between Philadelphia and Atlantic City, the rate is \$2.50. By the electric line of the Pennsylvania, between these points, the rate is \$2.25. These tickets will be sold also at the seashore resorts at the same rates.

The Interstate Commerce Commission's inquiry concerning rates on grain and grain products was resumed at Wichita, Kan., on July 11. C. B. Rader, Wichita Board of Trade, asserted that Wichita was handicapped because of not having a free inter-

change of tonnage. W. R. Scott, Kansas City Board of Trade, requested that hearings be held in Kansas City, but the request was denied and the Kansas City case must be presented at Wichita on July 18. Others presenting facts or arguments at Wichita were J. C. Gutsch, Rock Island; G. G. Moffitt, speaking for southern Kansas millers and A. B. Enoch, Rock Island.

The Interstate Commerce Commission has suspended from July 10 to February 10, 1928, the operation of freight-rate schedules published by the Atlantic Coast Line and others proposing to assess a charge of \$12.50 per car for furnishing refrigerator cars on shippers' orders to load with bananas or cocoanuts at South Atlantic ports and Tampa, Fla. This charge was proposed for iced refrigerator cars and, when bunkers of cars are used, would be in addition to the cost of any ice furnished by the carrier or its agent. When dry refrigerator cars are furnished and the movement is without ice, the charge proposed was \$5 per car.

The Interstate Commerce Commission has authorized the Baltimore & Ohio and its connections which transport coal from the Fairmont district of West Virginia, upon filing of sixth section applications, to publish tariffs on 15 days' notice, effective on August 10, establishing rates from the Fairmont district and other districts than those from which rates were ordered reduced in its order, which will be in accord with the views expressed in the decision. The commission suggested a reduction of 10 cents a ton in the rate from the Fairmont district but did not order it, and it is understood that the roads still have the matter under consideration.

Allegheny Advisory Board

The Allegheny Shippers' Advisory Board held its regular meeting at Youngstown, Ohio, on June 30, with an attendance of about 400. The meeting was addressed by C. W. Galloway, vice-president of the Baltimore & Ohio and J. L. Marsh, president of the Youngstown Chamber of Commerce. The commodity committee reports indicated for the next three months an average increase in volume of traffic of about 7.9 per cent as compared with 1926; in steel there is expected to be a decrease of 2.1 per cent, a smaller percentage than had been expected. Other reports indicate the following percentages of increase: In coal and coke, 16 per cent; sand and gravel, etc., 4.4 per cent; brick and clay, 15 per cent; petroleum and its products, 13.7 per cent. In pottery and earthenware there is expected a decrease of 15.4 per cent. The bankers and the railroads report satisfactory conditions.

The Southern Pacific has applied to the Railroad Commission of California for authority to increase ferry and train fares between San Francisco and East Bay points.

Monthly commutation tickets sold at

Traffic

\$5.20 are proposed to be advanced to \$6.50 and corresponding increases are desired in other fares.

Mid-West Shippers' Advisory Board

Some quickening in business activity in general in the mid-west territory in the coming three months, as contrasted with the corresponding quarter last year, was indicated by the reports of the various commodity committees of the Mid-West Shippers' Advisory Board at the thirteenth regular meeting of that organization at Green Bay, Wis., on July 13.

The brick and clay products shippers anticipate an increase of 10 per cent in their shipments, while an increase of from 8 to 10 per cent is expected by the cement committee. Highway work in practically every state will show an increase, while city street work, also shows a higher level. Grain and grain products are expected to be better by 10 per cent than in the third quarter of 1926; hides and leather by about 20 per cent; lumber 5 per cent and paper and pulp, 8 per cent. The sand, gravel and stone committee reported an expected increase of 15 per cent.

Business about equal to that done in the third quarter of 1926 is anticipated by the acid and chemical industry; the agricultural implement industry; the corn products industry; fresh fruits and vegetables; livestock; packing house products; petroleum; and soap.

The movement of field seeds in the coming three months will be lighter than during the corresponding period last year by from 15 to 20 per cent. The movement of new crop seed to the terminal markets will begin during the latter part of August, and the volume of this movement will largely depend upon the outcome of the crops. The iron and steel industry is operating on a basis of approximately 75 to 80 per cent capacity which is 10 per cent below 1926.

A five per cent decrease is anticipated in lumber manufactures, and the same in the movement of machinery. The paperboard and paperboard box industry is reported as 15 per cent below normal for this time of year. The salt business is also a little below normal, but increased activity is expected shortly.

Lake Cargo Coal Rates Reduced

Tariffs reducing by 20 cents a ton the rates on bituminous coal from the Pittsburgh, Ohio No. 8 and Cambridge districts to the Lake Erie ports for transshipment by vessel, effective on August 10, in accordance with the order of the Interstate Commerce Commission in the lake cargo coal rate cases, began arriving at the commission's offices on July 9. The Chesapeake & Ohio, the Louisville & Nashville and the Norfolk & Western, serving the southern district fields of West Virginia and Ohio, had announced their intention of making a reduction at the same time of 10 cents a ton in their rates, to meet in part the rates from the northern district, and also a 10-cent reduction, suggested but not ordered by the commission, in the rate from the Fairmont district.

Later, however, it was announced that the reduction would not be made, and it is understood that at a meeting of the roads it was decided simply to follow the specific order of the commission.

Additional Findings in New England Divisions Case

The Interstate Commerce Commission on July 11 made public a report on further hearing in the New England divisions case in which, in 1922, it ordered an increase of 15 per cent in general in the divisions to be received by the complainant New England lines out of through freight rates to and from New England. In the present report the commission deals with requests made by the New England lines for additional increases on certain traffic and also with petitions filed by western and southern lines asking that they be not required to contribute to the increased divisions of the New England lines and of certain other lines asking that their divisions be increased. The commission now finds that since 1922 the trend of earnings in New England has been more favorable than in the remainder of the eastern group and that the record affords no basis for giving greater weight to the financial needs of the New England lines than was given at the time of the amended order. The findings are summarized as follows:

1. That the divisions with defendants covered by our order of March 28, 1922, are not shown to have been since unreasonable to complainants.

2. That in the case of the transcontinental joint rates covered by said order, the reasonable divisions of defendants in the western district will for the future be 72.5 per cent west of Chicago and related percentages west of the other gateways with eastern defendants, 3 cents per 100 lbs. in the case of eastbound citrus fruit to be deducted before prorating; that in the case of joint rates covered by said order to and from points in western trunkline territory which were increased 40 per cent in 1920, the divisions of defendants in the western district are not shown to be unreasonable; but that in the case of such joint rates to and from points in western trunkline territory which were increased 33.3 per cent in 1920, the divisions of said defendants in the western district will for the future be unreasonable to the extent that they are less than the divisions which said defendants would now be receiving except for our aforesaid order.

3. That in the case of the joint class rates covered by said order which apply via eastern gateways, and in the case of the joint commodity rates which apply via Hagerstown, Md., between points in New England and points in the southern group, the divisions of defendants in the southern group are not shown to be unreasonable; that in the case of joint commodity rates covered by said order which apply via Potomac Yard, Norfolk, and Richmond, Va., the divisions of defendants in the southern group are not shown to be unreasonable where said defendants receive as large a percentage of the rate as they receive of the class rate upon which the traffic would move in the

absence of a commodity rate, but that in all other cases said divisions will for the future be unreasonable to the extent that they are less than the divisions which said defendants would now be receiving except for our aforesaid order; and that in the case of the joint class and commodity rates covered by said order which apply via Ohio River gateways, the divisions of the defendants in the southern group will for the future be unreasonable to the extent that they are less than the divisions which said defendants would now be receiving except for our aforesaid order.

4. That in the case of the joint rates covered by said order in which the Delaware & Hudson participates, it has not been shown that the divisions of that defendant are unreasonable.

5. That in the case of the joint rates covered by said order in which the Erie and its subsidiaries participate, it has not been shown that the divisions of those defendants are unreasonable or otherwise unlawful.

6. That in the case of the joint rates covered by said order in which the Central of New Jersey participates with other defendants, it has not been shown that the divisions of that defendant are unreasonable; but that in the case of such joint rates in which the Central of New Jersey is the sole participating defendant, its divisions will for the future be unreasonable to the extent that they are less than it would now be receiving except for our aforesaid order.

7. That in the case of the joint rates covered by said order in which that part of the system of the New York, Chicago & St. Louis participates which was formerly the Lake Erie & Western, the divisions of that defendant are not shown to be unreasonable.

8. That in the case of joint rates which apply to transportation which is not wholly within the confines of the United States, we are without authority to prescribe divisions.

9. That in the case of joint rates in which the New England Steamship Company participates between points in New England and points on the lines of the defendants, the divisions of that complainant have not been shown to have been or to be unreasonable.

10. That in the case of the joint interstate rates on traffic, other than coal, in which complainants participate between points on the lines of defendants, other than the Boston & Albany, and other than the Central of New Jersey, where it is the sole participating defendant, and points on the lines of the Bangor & Aroostook, Grafton & Upton, South Manchester, Mo-shassuck Valley, United Electric, Narragansett Pier, New York, Westchester & Boston, and Wood River Branch, the divisions of complainants will for the future be unreasonable to the same extent that their divisions of other joint rates on merchandise traffic were found unreasonable in 66 I. C. C. 196.

11. That in the case of the joint interstate rates on traffic, other than coal, in which complainants participate to and from points on the lines of the defendants, other than the Boston & Albany, and other than the Central of New Jersey, where it is

the sole participating defendant, and which were not covered by our aforesaid order, the divisions of complainants will for the future be unreasonable to the same extent that their divisions of other joint rates on merchandise traffic were found unreasonable in 66 I. C. C. 196.

12. That in the case of the joint rates covered by said order in which complainants participate with defendants in connection with the Boston & Albany as an intermediate carrier, it has not been shown that the divisions of complainants are unreasonable.

13. That where the divisions of complainants or defendants were made up in part of a percentage of the joint rate and in part of a specific amount or arbitrary, the divisions which existed on March 28, 1922, were those of December, 1917, changed in proportion, in each case, to the changes in the joint rate of which the division was a part which occurred between December 31, 1917, and December 1, 1919.

14. That in the case of joint interstate rates on prepared sizes of anthracite coal in which the Boston & Maine, Central New England, Maine Central, and New Haven participate with defendants, the divisions of said complainants will for the future be unreasonable to the extent that they are less than the remainders of said joint rates after deducting the divisions, if any, prescribed herein for the Central Vermont and the present divisions, if any, of any other New England carrier, including the Boston & Albany, and after deducting certain specified divisions found to be reasonable for the services performed by defendants; and that in the case of such joint rates on prepared sizes of anthracite coal in which the Central Vermont participates, the divisions of said complainant will for the future be unreasonable to the extent that they are less than 110 per cent of its present divisions.

15. That in the case of joint interstate rates on bituminous coal in which the Boston & Maine, Maine Central, and Central Vermont participate with defendants, other than joint rates between points on the Boston & Maine and points on the New York Central, the divisions of said complainants are not shown to be unreasonable; that in the case of such joint rates on bituminous coal in which the Central New England and New Haven participate and in which the New York Central also participates, the divisions of said complainants are not shown to be unreasonable; but that in the case of other joint interstate rates on bituminous coal in which the Central New England and the New Haven participate with defendants, the divisions of said complainants will for the future be unreasonable to the extent that they are less than the remainders of said joint rates after deducting the present divisions, if any, of any other New England carrier, including the Boston & Albany, and after deducting certain specified divisions found to be reasonable for the services performed by defendants.

16. That no sufficient reason has been shown for the retroactive adjustment of any of the changed divisions herein prescribed.

Equipment and Supplies

Freight Cars

BOSTON & ALBANY—See New York Central.

THE LEHIGH VALLEY is inquiring for prices on the repair of 500 wooden box cars and 500 steel coal cars.

THE CLINTON & OKLAHOMA WESTERN has ordered 10 steel-frame box cars of 40 tons' capacity, from the American Car & Foundry Company.

THE WICHITA FALLS & SOUTHERN has ordered 50 steel-frame box cars of 40 tons' capacity, from the American Car & Foundry Company.

THE NEW YORK CENTRAL has ordered 5 special flat cars of 81½ tons' capacity and 9 of 92 tons' capacity from the Standard Steel Car Company, for service on the Boston & Albany. This is an addition to 10 ordered from the same builder and reported in the *Railway Age* of July 2.

Passenger Cars

THE ERIE is now inquiring for 25 all-steel suburban passenger coaches. In the *Railway Age* of April 2 it was reported that the Erie would buy this equipment.

THE LEHIGH VALLEY is inquiring for 2 steel dining cars and 2 steel club-dining cars. Inquiry is also being made for 3 gas-electric rail motor cars and 4 trailer cars.

THE ERIE has ordered 25 all-steel baggage and express cars from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of June 18.

Machinery and Tools

THE NORTHERN PACIFIC is inquiring for two 4-ft. radial drills and one punch and shear.

THE MISSOURI PACIFIC has ordered one 25-ton, 69-ft. span electric traveling crane from the Shaw Electric Crane Company.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for one squaring shear with a 24-in. gap, and one 12-in. hand planer and joiner.

THE NASHVILLE RAILWAY & LIGHT COMPANY has ordered a 48-in., 300-ton wheel press, from the Niles-Bement-Pond Company.

Iron and Steel

THE SOUTHERN is inquiring for 350 tons of steel for a bridge in Virginia.

THE BALTIMORE & OHIO is inquiring for 500 tons of steel for a bridge in Pennsylvania.

THE BANGOR & AROOSTOOK has ordered 375 tons of steel for a bridge at Presque Isle, Maine.

THE SOUTHERN has ordered 41,000 tons of rails from the Tennessee Coal, Iron & Railroad Company.

THE NORFOLK & WESTERN has ordered 1,000 tons of steel for a crane runway at Portsmouth, Ohio, from the Virginia Bridge & Iron Company. An order has also been given to the same company for 200 tons of steel for a bridge in Virginia.

THE GREAT NORTHERN has ordered 25,000 tons of rail, of which 3,000 tons was placed with the Inland Steel Company and 22,000 tons divided between the Illinois Steel Company and the Bethlehem Steel Company. This company also ordered 3,000 tons of tie plates from the Illinois Steel Company and Bethlehem Steel Company and 1,500 kegs of spikes from the Illinois Steel Company.

THE PENNSYLVANIA has ordered 50,000 tons of rail, of which 17,500 tons was placed with the Carnegie Steel Company, 7,500 tons with the Illinois Steel Company, 22,500 tons with the Bethlehem Steel Company, and 2,500 tons with the Inland Steel Company. The Pennsylvania has also placed orders for 25,000 tons of steel materials, and is inquiring for 300 tons of steel for a bridge at Terre Haute, Ind.

Signaling

THE CITY OF ROCHESTER has contracted with the General Railway Signal Company for the installation of automatic block signals on eight miles of double track in the Rochester subway. Color-light signals, type S, will be used. Model 5A switch machines will be used to operate turn-out and cross-overs. Dwarf and low speed signals will be operated by push-button apparatus.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered from the Union Switch & Signal Company material for the installation of the automatic block system on its line between Sherwood, Tenn., and Stevenson, Ala., 15 miles, single track, and between Stevenson, Ala., and Bridgeport, Tenn., 10 miles, double track. The order includes 52 color light signals, 211 relays and other material.

A BULLETIN issued by the Citizens' Smoke Abatement League of St. Louis, Mo., shows that violations of the anti-smoke regulations of that city by railroads have been reduced 43 per cent during the past year. This has been brought about largely through an educational campaign on proper firing of locomotives which has been carried on among firemen and engineers in St. Louis, the report states.

Supply Trade

T. J. Powell, 2089 Railway Exchange building, St. Louis, Mo., has been appointed St. Louis representative of the **Rome Iron Mills, Inc.**

The American Rolling Mill Company, Middletown, Ohio, has moved its St. Louis, Mo., office from the Boatman Bank building to 901 Ambassador building.

The P. I. Perkins Co., 110 High street, Boston, Mass., is now representative in the Boston territory of the **Pennsylvania Pump & Compressor Company**, Easton, Pa.

The T-Z Railway Equipment Company, 14 East Jackson boulevard, Chicago, has been appointed Chicago representative of the **Graham-White Sander Corporation**, Roanoke, Va.

William S. Kriebel, Jr., Bankers Trust building, Philadelphia, Pa., has been appointed a salesman in the Philadelphia territory for the **Bridgeport Brass Company**, Bridgeport, Pa.

The More-Jones Brass & Metal Company has been reorganized and is now a division of the **National Bearing Metals Corporation**, recently incorporated, with general offices at St. Louis, Mo.

The Ingersoll-Rand Company, New York, has opened a branch office at 236 High street, Newark, N. J. **F. K. Armstrong**, formerly connected with the company's New York sales branch, has been appointed manager.

I. N. Tate, assistant general manager of the **Weyerhaeuser Sales Company**, Spokane, Wash., has been promoted to general manager to succeed **Louis S. Case**, resigned. **Don Lawrence**, district manager at Spokane, will succeed Mr. Tate.

The **Pullman Company** stockholders, on July 12, ratified plans for organizing a holding company under the name of **Pullman, Inc.**, to take over the interests of the **Pullman Company** and the **Pullman Car & Manufacturing Corporation**. Under this plan $2\frac{1}{2}$ shares of new holding company stock will be issued for every share of Pullman Company stock now held.

The Eichman Machinery Company, Kansas City, Mo., now represents the **Whiting Corporation**, Harvey, Ill., in Kansas and part of Missouri. **The Huey & Philp Hardware Company**, Dallas, Texas, represents the corporation in Oklahoma and part of Texas; **L. H. Staley**, New Orleans, La., represents the corporation in Louisiana, the southern half of Mississippi, and in the city of Mobile, Ala., and the **H. B. Wilson Company**, St. Louis, Mo., represents the corporation in Arkansas. The **Whiting Corporation** will build a one-story addition to its plant to cost \$35,000.

The Electric Storage Battery Company, Philadelphia, Pa., has moved its Detroit branch quarters from 5740 Cass avenue to 8051 West Chicago boulevard; **H. G. Carron** is manager of this branch. The company's San Francisco, Cal., branch at 6150 Third street is in charge of **G. R. Murphy**, manager. Both plants are complete manufacturing units with floor space of over 35,000 sq. ft. The company recently opened a new factory branch at 1955 Hunting Park avenue, Philadelphia, Pa., **W. C. Hooven** is manager of this branch.

Thomas Mahar has been appointed manager of the service department of the **American Arch Company**, with headquarters at New York. He was born in Oswego, N. Y., and graduated from the public schools. Entered service of the **Rome, Watertown & Ogdensburg**, now part of the **New York Central**, at Oswego. He became round-house foreman at Chatham, N. Y., in 1903, and general foreman at Mott Haven and Highbridge from 1904-1907. He was then general foreman at Rensselaer and Albany until 1909, and master mechanic from 1909 to 1913, when he resigned to go with the **American Arch Company** as traveling engineer.

Charles R. Ellicott, eastern manager of the **Westinghouse Air Brake Company**, has been elected resident vice-president with headquarters at New York. Mr. Ellicott was born in Chicago, where his early education was received. In 1902 he was graduated as a bachelor of science from the **Sheffield**



Charles R. Ellicott

Scientific School of Yale University. He entered the employ of the **Westinghouse Air Brake Company** in August of that year, as a special apprentice in the **Wilmerding** shops, and was later appointed mechanical expert at New York. From 1905 until 1912 he served as representative of the company, first in New York and then in Boston. He was ap-

pointed assistant eastern manager in 1912 and promoted to eastern manager in 1920.

Carl H. Beck, for seven years assistant eastern manager for the **Westinghouse Air Brake Company**, at New York, has been appointed general sales manager of the company with headquarters at **Wilmerding, Pa.** Mr. Beck was graduated from the **Pennsylvania State College** in 1905 and in 1911 received his M. E. degree from the same college. He entered the employ of the **Westinghouse Air Brake Company** as



Carl H. Beck

a special apprentice in 1905, and after filling special shop and field assignments, was transferred to the **St. Louis** office in 1907, and given the position of steam road inspector. In 1909 he was advanced to representative of the **Westinghouse Traction Brake Company** in the same city, which position he held until 1919, when he was made special representative of the **Safety Car Devices Company** at **Wilmerding**. Mr. Beck's next promotion came in 1920, when he was made assistant eastern manager of the **Westinghouse Air Brake Company**, which position he held until his new appointment.

J. H. Kinney, general sales manager of the **Cyclone Fence Company**, Waukegan, Ill., has been appointed general manager, to succeed **J. W. Meaker**, who has resigned to become president of the **Bates Valve Bag Company**, Chicago. **H. G. Chapman**, treasurer, has been promoted to general sales manager to succeed Mr. Kinney, and will be succeeded by **A. W. Kirkham**, assistant treasurer, who in turn will be succeeded by **W. M. Jensen**, cashier. **R. E. Pinniger**, district sales manager at **Cleveland, Ohio**, has been appointed eastern sales manager, with headquarters at **Newark, N. J.**, and will be succeeded by **S. W. Burr**, assistant district manager at **Newark**.

The Air Reduction Company, Inc., New York, has bought the business, insofar as the manufacture and sale of oxygen, acetylene, and kindred products are concerned, of the **United Gas Improvement Contracting Company**, a subsidiary of the **United Gas Improvement**

Company and the United Oxygen Company, Philadelphia. The purchase includes oxygen plants at Philadelphia, Chester, Milton, Enola, and Reading, Pa., and an acetylene plant at Bridgeport, Pa. The **Air Reduction Sales Company**, the sales organization of Air Reduction Company, Inc., now has acquired through this purchase the production and distribution facilities of five additional oxygen plants and one acetylene plant in the industrial district of eastern Pennsylvania.

Aubrey J. Grindle, vice-president of the **Grindle Fuel Equipment Company**, Harvey, Ill., a subsidiary of the Whiting Corporation, has resigned to organize the **Pulverized Fuel Equipment Company**, Chicago. Mr. Grindle was for several years supervisor of experimental work on pulverized coal firing equipment for malleable iron annealing ovens and melting furnaces for the International Harvester Company. In 1915 he became associated with the Powdered Coal Engineering & Equipment Company and in the following year organized the Combustion Economy Corporation for the purpose of producing pulverized coal equipment for billet-heating furnaces. Later he was placed in charge of the foundries of the Stewart-Warner Company and still later was made chief army inspector of ordnance in charge of the inspection of materials at a number of factories in the Chicago district. After the war, he returned to his own company and in 1920 his company was taken over by the Whiting Corporation.

J. Dalrymple Rogers, formerly manager of the London, England, office of the Baldwin Locomotive Works, has been appointed London representative of the **International Railway Supply Company**. Mr. Rogers was graduated from Virginia Polytechnic Institute in 1906 and for the two years following served as an apprentice on the Chesapeake & Ohio. In 1909 he was graduated from Cornell University and from that time until 1913 was a machinist (subsequently a foreman) on the Virginian. He then went with the Union Pacific as roundhouse foreman at Pocatello, Idaho; was next general foreman of the Pere Marquette at Detroit, Mich.; and then superintendent of shops of the Virginian. From 1917-1919 he was with the U. S. Engineer Corps in Russian railway service and on staff duty in Washington, D. C. From 1919 to 1922 he was representative of the Baldwin Locomotive Works in South Africa; 1922-1924 manager, India office of same company at Calcutta; and 1924-1926 London manager.

Obituary

Fred L. Berry, who retired as district sales representative of the Iron Range territory of Fairbanks, Morse & Co., with headquarters at Minneapolis, Minn., in 1925, died on July 12. He was born in 1860 and had been in the employ of Fairbanks, Morse & Co. for 43 years.

Jay B. Odell a vice-president and director of the Western Electric Company, died on July 8 in the New Rochelle, N. Y., Hospital following an operation for appendicitis. Mr. Odell was born 44 years ago in Iowa Falls, Iowa. He was educated in the public schools of Chicago and New York and at Cornell University, from which he was graduated in 1904. Immediately following his graduation, he entered the employ of the Western Electric Company in New York, later going to the Chicago works of the company at Hawthorne. After a brief period there, he was transferred to New York where he served as an executive in the distributing department until 1918, when he was appointed manager of the distributing house in Richmond, Va. Three years later he returned to New York to take charge of the company's distributing house there. In 1924, he became assistant to the president of the Western Electric. In January, 1926, he was elected a vice-president in charge of purchasing and traffic, which position he held at the time of his death.

Paul Kircher, vice-president of the Canadian Concrete Products Company, Ltd., and resident manager of the Union Switch & Signal Company, at Montreal, Que., died in Chicago on June 10. The cause of death was pneumonia. Mr. Kircher was born on July 27, 1890, in Chicago and educated at the University of Illinois from which he was graduated in 1911, receiving the degree of C.E. in 1918. From June to September, 1911, he served as chairman for the city and county surveyor in Chicago, and later as a rodman in the city engineer's office at Chicago. He subsequently served as instrument man. He then went to the Illinois Central as a draftsman. In November, 1916, he resigned to go with the Universal Portland Cement Company, Chicago, as an engineer in the promotion bureau, leaving that company in October, 1917, to become office manager of the Massey Concrete Products Corporation and was sales manager from February until May, 1919, when he was appointed resident manager of the Massey Concrete Products Corporation and the Canadian Concrete Products Company, Ltd. In August, 1920, he was promoted to manager of the pole department of the Massey Concrete Products Corporation and resident manager of the Canadian Concrete Products Company, Ltd., and since February, 1925, was vice-president of the Canadian Concrete Products Company, Ltd., and resident manager of the Union Switch & Signal Company. He had also served as engineering advisor to the president of the Massey Concrete Products Corporation.

THE EDMONTON, DUNVEGAN & BRITISH COLUMBIA was out of business between Edmonton, Alta., and McLennan for two days, June 24 to 26, when flood water from the East Prairie and West Prairie rivers covered the line at High Prairie, Alta.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been let to McClintic-Marshall Co., of Pittsburgh, Pa., for the construction of shop buildings at Cleburne, Texas. This work involves the use of about 2,800 tons of steel.

ATLANTIC COAST LINE.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the construction of a 500-ton Simplex automatic electric coaling station at Lakeland, Fla.

BALTIMORE & OHIO.—This road plans to build a 500-ton steel bridge on its line in Pennsylvania.

BALTIMORE & OHIO.—Sheesley & Janney of Johnstown, Pa., have been awarded a contract for work on the elimination of a grade crossing on Paddock road in Cincinnati, O., which will cost \$135,000. A contract has also been let to the Vang Construction Company of Cumberland, Md., for a part in the same project, to cost about \$30,000. A contract has been let to the Pittsburgh-Des Moines Steel Company of Pittsburgh, Pa., and to J. M. Caen, of Baltimore, Md., for the erection of water stations and treating plants. The former company will construct these facilities at Ravenna and Kent, O., at an estimated cost of \$7,000, and the latter at Greenwich and Lodi, O., at an estimated cost of \$17,000.

BANGOR & AROOSTOOK.—This road will construct a 375-ton steel bridge at Presque Isle, Maine.

BESSEMER & LAKE ERIE.—Bids have been received for the construction of a reinforced concrete overhead highway bridge at Shermansville, Pa., which will cost around \$118,564.

CANADIAN NATIONAL.—Bids will be received until July 29 for the construction of a coaling station of 100-ton capacity at Hope, B. C.

CANADIAN NATIONAL.—A contract has been let to the Tomlinson Construction Company, Winnipeg, Man., for the construction of a line between a point near Sturgis, Sask., and Hudson Bay Junction, with a branch from a point on this line to a point between Crooked River, Sask., and Mistatim, a total of about 132 miles. Grading and the construction of culverts and station buildings will be done by the contractor. Ballasting, rail laying and the construction of bridges will be completed by company forces. It is planned to complete the line to a point 21 miles north of Sturgis by the end of 1927.

CANADIAN NATIONAL.—Bids closed on July 15 for the construction of 100-ton mechanical coaling station at Moose Jaw, Sask., for the construction of a 100-ton mechanical coaling station at Camrose, Alta., and for the construction of a combined passenger and freight station and platform at Willow Bunch, Sask. A con-

tract has been let to the Campbell Construction Company, Winnipeg, Man., for clearing the right of way, grading and construction of culverts for a belt line at Saskatoon, Sask., to have a total length of about 7 miles. A contract for clearing the right-of-way, grading and construction of culverts for a line between Weyburn, Sask., and Radville, 23 miles, has been awarded to Hett & Sibbald, Ltd., and Bryson Brothers, Prince Albert, Sask. The cost of this project is estimated at \$570,000. The Campbell Construction Company, Calgary, Alta., has been awarded the contract for grading and construction of culverts for a line from Shell Brook, Sask., west to a point west of Shell Lake, Sask., 77 miles. Expenditure necessary for the completion of entire line is estimated at \$2,480,000.

CENTRAL OF NEW JERSEY.—A contract for the construction of a 600-ton four-track reinforced concrete automatic electric coaling station, with sanding facilities at Bethlehem, Pa., has been awarded to the Roberts & Schaefer Company, Chicago. This plant has been designed to mix various proportions of anthracite and bituminous coals mechanically.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Bids are being received by this company for the construction of a roundhouse and terminal buildings at South Anderson, Ind., at a total cost of approximately \$200,000. A contract for the grading and masonry work in connection with the enlargement of the yards at the same point has been let to the Walsh Construction Company, Davenport, Ia. A contract for the construction of a steel shop building at Cincinnati, Ohio, has been awarded to the Blaw-Knox Company, Blawnox, Pa. The contract for the foundation of this structure was let to the Kuert Construction Company, Indianapolis, Ind. The Hecker-Moon Company, Cleveland, Ohio has been awarded a contract for the separation of grades at Main street, South Anderson.

FLORIDA EAST COAST.—This company is contributing to the cost of two overhead bridges, eliminating grade crossings, and being built by the state highway department. Both of these bridges are now under construction, one at an estimated cost of \$44,000, the other at an estimated cost of \$68,000.

GREAT NORTHERN.—Contracts for the installation of a treating cylinder, storage tanks and working tanks at the tie-treating plant under construction at Hillyard, Wash., have been let to the Puget Sound Machinery Depot, Seattle, Wash., and to the Williams Brothers Company, Minneapolis, Minn. A steel building for housing the adzing, boring and incising machinery will be constructed by the Union Iron Works, Spokane, Wash. Company forces are employed in the major part of the construction.

GULF & SHIP ISLAND.—The North Division of the Gulf & Ship Island has applied to the Interstate Commerce Commission for authority for the construction of a 150-mile line extending from a connection with the main line of the G. & S. I. at Mendenhall, Miss., in a general

northerly direction through Kosciusko, Zama, Carthage, Canton, and Pelahatchie, through a portion of Simpson, Smith, Scott, Leake, Attalla, Madison and Rankin counties, Miss., to serve a lumber traffic.

KANSAS CITY TERMINAL.—A contract has been let to the List & Weatherly Construction Company for the construction of the Van Brunt boulevard subway under eight tracks of this company at Kansas City, Mo. The approximate expenditure is \$290,000.

LEHIGH VALLEY-PENNSYLVANIA.—These roads have given a contract to the Arthur McMullen Company, of New York, for the construction of four main piers on pneumatic caisson foundations for the bridge across the Newark bay. The approximate cost of work covered by this contract is about \$1,000,000.

LEHIGH VALLEY.—The New Jersey Board of Public Utility Commissioners has ordered the elimination of the grade crossings of two of this company's three tracks at Frelinghuysen avenue, Newark, N. J. The Pennsylvania, which, has two tracks across this street at this point, will participate in the necessary work. The total cost is estimated at \$514,867.

NEW YORK CENTRAL.—A contract has been let to the Ogle Construction Company, Chicago, for the construction of a 50-ton, one-track, electric, steel coaling station at Olivers, Ind. The same contractor has been awarded a contract for the installation of a one-track, electric cinder plant at the same point.

NEW YORK CENTRAL.—A contract has been let to James Stewart & Co., for the erection of a 35-story office building to bridge Park avenue between 45th and 46th streets, N. Y. The building was designed by Warren & Wetmore, architects, and will cost \$9,000,000. The structure, which will contain stores and will have frontages on Vanderbilt and Park avenues, is linked up directly with the plan to eliminate the bottle-neck traffic situation at the north end of the Grand Central Terminal by the opening of Depew Place. A separate contract for a roadway running through the building has been let to James Stewart & Co.

NORFOLK & WESTERN.—This road will build a 1,000-ton steel crane-runway at Portsmouth, Ohio. It has ordered from the Virginia Bridge & Iron Company 200 tons of steel for a bridge it plans to construct on its line in Virginia.

PACIFIC GREAT EASTERN.—Bids are being received for the construction of reinforced concrete bridges at three points on the Squamish sub-division between Cheakamus, B. C., and Watson.

PANHANDLE & SANTA FE.—A certificate has been issued authorizing this road to construct a line of railroad in Carson and Hutchinson counties, Tex., from White Deer, in Carson county, thence north and northwest to a point in Hutchinson county, a distance of 21 miles. Construction costs are estimated at \$921,900 for the first segment, including 15 miles of sidings, and \$1,-

032,400 for the second segment, including 12 miles of side tracks.

PENNSYLVANIA.—This road plans to build a 300-ton steel bridge at Terre Haute, Ind.

PENNSYLVANIA.—A contract has been awarded to W. F. Trumble & Sons Co., of Pittsburgh, Pa., for grading work at Sewickley, Pa., which, it is estimated, will cost \$100,000.

PENNSYLVANIA.—A contract has been let to the Beatty Engineering & Construction Company of Hamburg, N. Y., for the construction of overhead bridge at Mayville, N. Y., at a cost of \$66,000. Another contract has been let to T. J. Foley Company of Pittsburgh, Pa., for the construction of an overhead highway bridge to eliminate a grade crossing at Rootstown, O., which will cost around \$50,000. M. J. McMenamin of Philadelphia, Pa., has been awarded a contract for the construction of a bridge over Girtys' run at Millvale, Pa., at a cost of \$30,000.

PENNSYLVANIA.—The board of directors has authorized the expenditures necessary to complete all of the construction and other work on its Little Creek freight terminal near Norfolk, Va. The project will be pushed forward as rapidly as possible and the terminal will be opened and in operation in 1928. When finished it will represent an expenditure of approximately \$4,000,000. The Little Creek project will provide a new southern terminal for the car floats and tugs of the "Cape Charles Route." It will shorten the water haul by 12 miles across the mouth of the Chesapeake Bay. The present distance from Cape Charles to Port Norfolk, the southern terminal now in use, is 36 miles. The distance from Cape Charles to Little Creek will be 24 miles. In addition, it will reduce the congestion of vessel traffic in Hampton roads and the Elizabeth river by taking the extensive freight ferrying operations entirely out of those waters. The remaining work now authorized by the board of directors will consist of completing the float bridges and building the necessary yards and tracks to connect the Little Creek terminal with the Belt Line Railroad.

PIEDMONT & NORTHERN.—Plans are being made to complete connecting links between Spartanburg, S. C., Gastonia, N. C., a distance of 56 miles, and between Charlotte and Winston-Salem, N. C., a distance of 70 miles.

READING.—The "North Broad Street Station," planned by this company at Philadelphia, will replace the two stations at Huntingdon street and will be erected directly on the eastern side of Broad street at a point south of the bridge which carries the street over the Reading tracks. The new station will be easily accessible from the new Broad street subway line. The station is to be of Indiana limestone, 180 ft. in length and 80 ft. in depth. A Doric colonnade will extend along the facade. The main entrance faces the street with a second on the south side of the structure where a large marquee will overhang an automobile driveway. A

waiting room will occupy the central portion of the building. A dining room and lunch room will be placed along the northern side, while smoking, rest and baggage rooms will line the south wall. Directly opposite the main entrance and at right angles to the building, a concourse, 110 ft. long and 35 ft. in width, will span the Reading tracks. Here are to be placed the ticket offices and news stands. On the track level below two covered island platforms are to be built. These will serve the express and local tracks. The platforms are to extend 1,150 ft. along the tracks. The railroad has acquired property south of the proposed station, the rear of which will be utilized exclusively as a parking space. Passengers will be permitted to leave their automobiles in care of station attendants while making a train trip.

ST. LOUIS-SAN FRANCISCO.—A contract has been let to the Ogle Construction Company, Chicago, for the construction of a 200-ton, two-track, electric, reinforced concrete coaling station at Cherokee, Kan.

ST. LOUIS-SAN FRANCISCO.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the construction of a 400-ton four-track reinforced concrete Simplex automatic electric coaling station at Kansas City, Mo.

SOUTHERN.—This road is planning to build a 350-ton steel bridge on its line in Virginia.

TEXAS & PACIFIC.—A contract for the construction of an earth dam for the creation of a water supply reservoir at Millsap, Tex., has been let to C. T. Scott, Millsap. This project involves a slight change of alignment at Millsap, excavation of about 70,000 cu. yd. of earth and construction of several concrete culverts and a concrete bridge.

VANCOUVER HARBOR BOARD.—The Dominion government has given an order-in-council authorizing the expenditure of \$1,569,887 for the development of railway terminal facilities at Vancouver, B. C. The expenditure includes the purchase of right-of-way at a cost of \$779,000, extension of the line from St. George's avenue to Lynn creek and construction of a storage yard at North Vancouver at a cost of \$163,800, and construction of a subway under Lonsdale avenue at a cost of \$261,500.

VIRGINIAN.—A contract has been let to the Walton Sudduth Company of Bluefield, W. Va., for the construction of a sub-tracks between Roanoke, Va., and Princeton, W. Va., to cost \$35,000.

grade for the extension of eight passing

THE ENGINEERING DEPARTMENT of the city of Milwaukee, Wis., has presented a report to the city council recommending the substitution of oil-electric for steam locomotives for switching movements within the city. Electrification of railroad lines within Milwaukee is not considered feasible by the engineer who prepared the report.

Railway Finance

CHESAPEAKE & OHIO.—*Virginia Port Authority Approves Merger.*—The State Port Authority of Virginia has advised Governor Harry F. Byrd, the State Corporation Commission and the Interstate Commerce Commission that it has adopted a resolution approving the proposed merger of the Chesapeake & Ohio with the Erie and Pere Marquette. The text of the resolution follows in part.

RESOLVED, That the State Port Authority of Virginia, having in mind the interests of the State of Virginia and of the Port of Hampton Roads, without expressing any opinion as to the rights of the stockholders or as to how the same will be affected, but believing that the interests of the state and especially the port will be promoted by the proposed merger of the Chesapeake & Ohio with the Erie and the Pere Marquette, endorses the proposed merger—being convinced that the superior advantages of the Port of Hampton Roads will attract to the port additional traffic which is now moving through other ports over lines which are involved in the proposed merger.

CHICAGO & ALTON.—*Annual Report.*—Annual report for 1926 recently issued by the receivers shows a net loss, after allowance for interest charges, of \$498,758 as compared with net income in 1925 amounting to \$41,283. Selected items from the income statement follow:

Chicago & Alton		1926	1925
RAILWAY OPERATING REVENUE			
Operating revenue		\$31,474,824	\$31,077,084
Maintenance of way		\$4,191,780	\$3,809,003
Maintenance of equipment		7,256,915	6,917,487
Transportation		11,315,490	11,209,191
TOTAL OPERATING EXPENSES			
Operating expenses		\$24,209,304	\$23,426,972
Operating ratio		76.92	75.38
NET REVENUE FROM OPERATIONS			
Operating revenue		\$7,265,519	\$7,650,112
Railway tax accruals		1,236,856	1,282,761
Railway operating income		\$6,028,650	\$6,359,094
Equipment rents—net Dr.		1,101,230	979,444
Joint facility rents—net Dr.		935,018	831,780
NET RAILWAY OPERATING INCOME			
Operating income		\$3,986,403	\$4,547,871
Non-operating income		188,148	212,293
GROSS INCOME		\$4,174,551	\$4,760,164
Rent for leased roads		251,949	251,932
Interest on funded debt		3,473,232	3,597,242
TOTAL DEDUCTIONS FROM GROSS INCOME			
Gross income		\$4,673,309	\$4,718,880
Net income		Def. \$498,758	\$41,283

CHICAGO & EASTERN ILLINOIS.—*Acquisition.*—The Interstate Commerce Commission has issued a certificate authorizing this company to acquire control of the Chicago Heights Terminal Transfer Railway by purchase of its capital stock, subject to a series of eight conditions, requiring the maintenance of the corporate entity of the Terminal company and its present neutrality of handling traffic, etc., and providing that jurisdiction is retained to reopen the proceedings on the application of anyone having an interest at any future time.

ERIE.—*Equipment Trust.*—This company has been authorized by the Interstate Commerce Commission to assume obligation and liability in respect of \$6,422,000 of equipment trust certificates, to be sold at not less than 98.68.

GREENBRIER, CHEAT & ELK.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire from the West Virginia Pulp & Paper Company a line from Cheat Junction, W. Va., to Spruce, 39 miles, as part of a plan for a transfer of its property to the Western Maryland under lease. The capital stock of the applicant is owned by the pulp and paper company.

ILLINOIS CENTRAL.—*Flood Losses.*—J. L. Beven, vice-president, has issued a statement saying that the property of this carrier was damaged to the extent of \$2,000,000 as a result of the Mississippi floods. "Of this amount," he said, "\$700,000 has already been charged against operating expenses and the balance will be charged off at the rate of \$200,000 a month." Mr. Beven further stated:

"Conditions in the flood area have improved materially and the water is steadily receding. Of course it is difficult to say what effect the floods will have on general conditions in our territory. Early indications are that the cotton crop will be slightly less than it was last year on account of the reduced acreage which resulted from the floods.

"Preliminary estimates indicate that our gross revenues for June will be slightly larger than in June last year, when they totaled \$14,962,157. The net railway operating income will probably be slightly less than in 1926 because of the flood expense.

"Notwithstanding the floods and the bituminous strike, the earnings for first half of 1927 are not expected to show any great difference from those in the corresponding period last year.

"Even though operating expenses in that period showed an increase of \$822,594, which was due partly to the floods, the operating expenses consumed 76.7 cents of each gross dollar as compared with 77.3 cents of each gross dollar in same period last year."

KINDER & NORTHWESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Kinder, La., to Emad, 2 miles.

MISSOURI PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the line of the Coal Belt Electric Railway, from a point near Marion, Ill., to Hafer and Herrin, 9.96 miles. It owns the capital stock of the company.

ST. LOUIS SOUTHWESTERN.—*Court Denies Election Invalidation Petition.*—The circuit court at St. Louis, Mo., has denied a petition to invalidate the recent election of directors, presented by Walter E. Meyer of New York. Mr. Meyer claimed re-election to the board of directors on the plea that he had received more votes than F. W. Green, vice-president, whose election was recognized. A state law of Missouri requires that three members of the board of directors be residents of the state of Missouri and Mr. Meyer was held to be ineligible.

SEABOARD AIR LINE.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$850,-

000 of equipment trust certificates, to be sold at not less than 97.6 and \$152,500 of deferred equipment trust certificates, to be sold at not less than par.

SOUTHERN PACIFIC.—Abandonment.—This company and the Central Pacific have applied to the Interstate Commerce Commission for authority for the abandonment of the line between Weed, Calif., and Grass Lake, 20.5 miles.

SOUTH OMAHA TERMINAL COMPANY.—Acquisition.—The Interstate Commerce Commission has authorized this company to acquire and operate the railroad properties of the Union Stock Yards Company of Omaha, Ltd., and to issue \$1,650,000 of capital stock in payment.

THORNTON & ALEXANDRIA.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Thornton to Hampton, Ark., 23 miles, and from Rock Island Junction to Tinsman, Ark., 2 miles.

UNION REFRIGERATOR TRANSIT COMPANY.—Equipment Trust.—Lee, Higginson & Co. have offered \$2,250,000 Union Refrigerator Transit Company, series G, 5 per cent equipment trust certificates at prices to yield from 4.60 per cent to 5.15 per cent depending upon the maturity. The equipment includes 1,100 new steel under-frame refrigerator cars with a value in excess of \$3,000,000.

WHEELING & LAKE ERIE.—Damage Suit.—Robert J. Marony has filed suit in the Supreme Court of New York for \$25,000 damages because of the alleged refusal of the railroad company to accept 500 shares of its preferred stock to be converted into an equal number of common shares. This suit is an aftermath of the recent near corner in the stock of this railroad company.

Average Price of Stocks and Bonds

	July 12	Last week	Last year
Average price of 20 representative railway stocks..	115.39	114.10	97.99
Average price of 20 representative railway bonds..	93.63	93.81	91.36

Valuation Reports

The Interstate Commerce Commission has issued final or tentative valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Final Reports

Live Oak, Ferry & Gulf.....	\$699,400	1917
Lorain & Southern.....	65,833	1917
Champlain Transportation Co.	625,000	1916
Tuskegee	100,000	1918
Wilmington, Brunswick & Southern	287,500	1917

Tentative Reports

East St. Louis Connecting...	\$1,875,000	1919
East St. Louis Junction.....	432,746	1919
Pittsburgh & Ohio Valley...	153,000	1919
St. Louis Transfer.....	218,000	1919
Manufacturers' Junction	797,500	1919
Charlotte Harbor & Northern.	2,861,200	1918
Tavares & Gulf.....	301,819	1918

Railway Officers

Executive

J. H. Daggett has been elected president of the Manistee & Northeastern, with headquarters at Milwaukee, Wis., following the dissolution of the receivership and the release of the Michigan Trust Company as receiver. **S. J. Scott**, general manager for the receiver, has been elected vice-president and general manager, with headquarters at Manistee, Mich.

J. L. Lancaster, president of the Texas & Pacific, has also been elected president of the Abilene & Southern, with headquarters at Dallas, Texas. The jurisdiction of the executive officers of the Texas & Pacific has been extended to cover the Abilene & Southern. **J. B. Shackelford** has been retained as general freight and passenger agent of the Abilene & Southern, with headquarters at Abilene, Tex.

Ill., remaining at that point until 1889 when he was appointed local agent on the Soo line at St. Paul, Minn. Several years later he was advanced to general agent at Rhinelander, Wis., being transferred to the claim department in 1896. On April 15, 1903, Mr. Hodson was promoted to freight claim agent, a position he held continuously until his retirement.

Edward T. Miller, general solicitor of the St. Louis-San Francisco, has been elected vice-president and general solicitor, with headquarters at St. Louis, Mo., a newly created position. Mr. Miller was born at Keytesville, Mo., on December 29, 1870, attending Wentworth Military Academy, Lexington, Mo., during his early years. In 1879 he graduated from Westminster College, Fulton, Mo., and returning to Keytesville to read law, he was admitted to the bar in 1892. Mr. Miller practiced law

Financial, Legal and Accounting

E. F. Olsen, purchasing agent of the Manistee & Northeastern, has been appointed secretary and purchasing agent, with headquarters at Manistee, Mich. **C. F. Kuehl**, auditor, has been appointed treasurer and auditor, with headquarters as before at Manistee.

C. I. Sturgis, vice-president, secretary and treasurer of the Chicago, Burlington & Quincy, with headquarters at Chicago, has in addition been appointed assistant secretary and assistant treasurer of the Colorado & Southern. **H. W. Johnson**, comptroller of the Burlington, with headquarters at Chicago, has in addition been appointed comptroller of the C. & S., succeeding **J. H. Bradbury**, who remains as comptroller of the Ft. Worth & Denver City and Wichita Valley. **W. F. Dobecki**, auditor of expenditures of the C. & S., has been promoted to auditor, with headquarters at Denver, Colo.

John T. Ludlum, assistant freight claim agent of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been promoted to freight claim agent, with headquarters at the same point, succeeding **Arthur E. Hodson**, who has retired at the age of 70. **George A. Porter** and **F. M. Seiberlich** have been appointed assistant freight claim agents, with headquarters at Minneapolis. Mr. Hodson, who is retiring after 38 years in the service of the Soo line, was born on March 25, 1857, at Prophetstown, Ill., and was educated at the Russel Military School, New Haven, Conn. He entered railway service in September, 1879, in the freight department of the Chicago, Milwaukee & St. Paul at Rock Island,



E. T. Miller

in Keytesville until 1903, establishing during that time a second office at Brunswick, Mo. In the latter year he became associated with Boyle, Priest & Lehmann at St. Louis, where he remained until 1908 when he entered the legal department of the Frisco as an attorney. In January of the following year he was promoted to general attorney. After filling the position for 16 years Mr. Miller was promoted to general solicitor on May 15, 1925, which position he held until his election to vice-president and general solicitor on May 24.

Operating

D. A. Callahan has been appointed assistant trainmaster on the Wheeling division of the Pennsylvania, with headquarters at Mingo Junction, Ohio.

F. S. Weisbrook, engineer of maintenance of way and structures of the Davenport, Rock Island & Northwest-

ern, with headquarters at Davenport, Iowa, has been appointed general manager, with headquarters at the same point, succeeding **C. B. Rodgers**, retired because of ill health.

Traffic

O. D. Crockett has been appointed traffic manager of the Gainesville Midland, with headquarters at Gainesville, Ga.

David C. Heffernan has been appointed general agent of the New York Central Lines, with headquarters at New Haven, Conn., succeeding **Albert E. Crocker**, promoted.

B. F. Livingston, supervisor of service in the office of the chief of freight transportation of the Pennsylvania, has been appointed perishable traffic agent, a newly created position.

W. H. Cummins has been appointed general freight agent and auditor-secretary of the Kansas & Missouri Railway & Terminal Company with headquarters at Kansas City, Kan.

William H. Cundey, who has been appointed assistant to the passenger traffic manager of the Denver & Rio Grande Western, with headquarters at Denver, Colo., was born on January 10, 1868, at Philadelphia, Pa. He entered railway service at the age of 16 as a clerk in the office of the commercial agent of the Wabash at Denver, remaining there only a few months when he became a junior clerk in the passenger auditing department of the D. & R. G. in November, 1884. Since that time Mr. Cundey has



W. H. Cundey

been continuously in the service of the D. & R. G. and its successor the D. & R. G. W., for nearly 43 years. Mr. Cundey was advanced successively through the positions of stock and voucher clerk in the general passenger department, assistant passenger agent, city passenger agent at Denver, traveling passenger agent and general agent in the passenger department, with headquarters at Colorado Springs, Colo. On June 1, 1915, he was promoted to assistant general passenger agent, with

headquarters at Denver. During 1925 Mr. Cundey was promoted to general passenger agent, a position he held until his further advancement to assistant to the passenger traffic manager.

C. E. Jefferson, general freight agent of the Canadian Pacific, with headquarters at Winnipeg, Man., has been appointed assistant freight traffic manager of the Western lines with the same headquarters.

A. J. Cronin, assistant general freight and passenger agent of the Denver & Rio Grande Western at Salt Lake City, Utah, has been appointed assistant general freight agent, with headquarters at the same point.

W. V. Reid, chief clerk in the traffic department of the International-Great Northern and the Gulf Coast Lines at Houston, Tex., has been promoted to assistant general freight agent, with headquarters at the same point, succeeding **R. H. Schultz**, resigned.

Albert E. Crocker, general agent of the New York Central Lines, with headquarters at New Haven, Conn., has been appointed New England agent of the Boston & Albany (part of the New York Central), with headquarters at Boston, Mass., succeeding **John G. Church**, deceased. **John J. Woodis** has been appointed general agent of the Boston & Albany, with headquarters at Boston, and the office of east bound agent has been abolished.

Engineering, Maintenance of Way and Signaling

M. H. Brown, Jr., has been appointed division engineer of the Montana division of the Oregon Short Line, with headquarters at Pacatello, Idaho.

E. L. Waltz, signal and telegraph supervisor on the Chicago Great Western with headquarters at St. Paul, Minn., has been promoted to superintendent of signal construction, with headquarters at Chicago.

W. L. Curtiss, mechanical engineer of the Exterior zone of the New York Central, Buffalo and East, with headquarters at New York, has been appointed engineer of water service, with the same headquarters.

Earl B. Smith, signal supervisor on the lines of the New York Central, east of Buffalo, with headquarters at New York, has been promoted to assistant signal engineer of the Grand Central Terminal and Electric division, with headquarters at the same point.

Purchases and Stores

T. M. McKeown, assistant purchasing agent on the Canadian Pacific, with headquarters at Victoria, B. C., has been promoted to purchasing agent, with headquarters at the same point. **William Bell**, commissary purchasing agent at Victoria, has been promoted to succeed Mr. McKeown.

Special

C. L. Weldon, assistant manager of Jasper Park Lodge, the Canadian National's hotel in Jasper National Park, has been appointed acting manager of the Macdonald Hotel, Edmonton, Alberta, succeeding **A. S. Detlor**, who is resigning from service.

Obituary

C. W. HUNTINGTON

Clarence W. Huntington, formerly president of the Virginian, died on July 12, at his home in Elizabeth, N. J., after a two-day illness. Mr. Huntington was born on May 31, 1857, at Newark, N. J., and was educated at Newark Academy and at Dorchester High School, Boston, Mass. He entered railway service in 1876 as a freight brakeman on the Chicago, Rock Island & Pacific, and continued with that company in various capacities until 1892. He then became assistant superintendent of the Des



C. W. Huntington

Moines, Northern & Western (now a part of the Chicago, Milwaukee & St. Paul). He later served as superintendent of the same road, and left it in 1894 to become general superintendent of the Iowa Central (now a part of the Minneapolis & St. Louis), which position he left in 1902 to become general superintendent of the Central of New Jersey, with headquarters at New York. In 1914 he was elected vice-president and general manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., and two years later became chairman of the board of directors of the Virginian. On March 1, 1917, Mr. Huntington was elected president of the same company, and served in that capacity until the end of April, 1925, when he resigned.

H. Clay Pierce, chairman of the board of directors of the Mexican Central from 1900 to 1910 and chairman of the local board of its successor, the National of Mexico, from 1910 to 1914, died at New York on June 28 at the age of 78 years. For a short period of years following 1909 Mr. Pierce was chairman of the board of directors of the Tennessee Central. From 1913 until his retirement in 1923 he had been chairman of the board of the Pierce Oil Corporation.